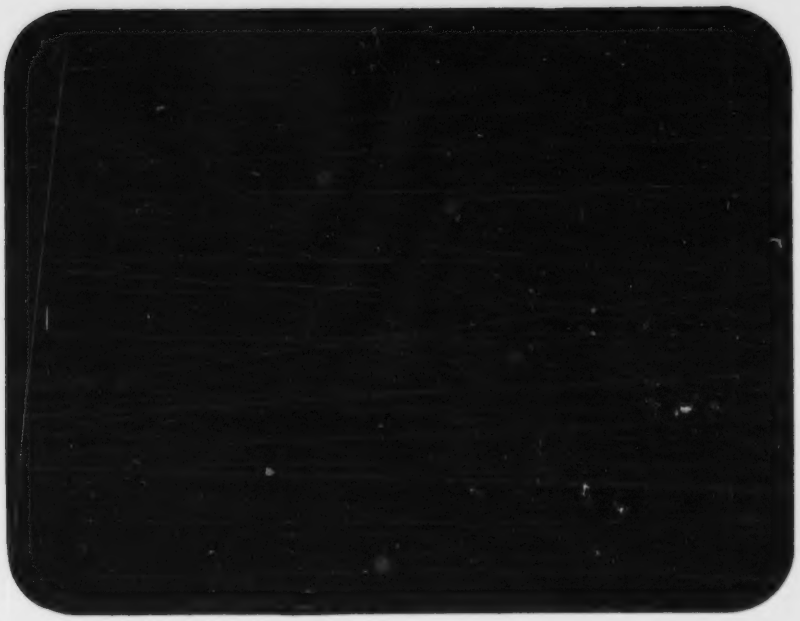

Province of British Columbia
Ministry of Forests

F.S.189(1)INF 82/6

DRAFT

RESOURCE MANAGEMENT PLAN #1

FOR THE

ROBSON VALLEY TIMBER SUPPLY AREA

MARCH 1989

Approved by: _____ Date: _____

J.R. Cuthbert
Chief Forester

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PREFACE

The Resource Management Plan for the Robson Valley Timber Supply Area (TSA) is a public document intended for the use of the Forest District Manager and holders of licences under the Forest and Range Acts. This Plan describes levels of resource production and resource management strategies, and guidelines. This Plan's purpose is to serve as a guide for the administration of forest programs.

If the reader seeks additional information not found in the Plan, further detail may be obtained by contacting the following offices:

Regional Manager
Prince George Forest Region
1011 - 4th Avenue,
Prince George, British Columbia
V2L 3H9

District Manager
McBride Forest District
300 Robson Square,
Box 40
McBride, British Columbia
V0J 2E0

SUMMARY

As the chief steward of British Columbia's forest lands, the Ministry of Forests develops plans for managing forest, range and recreation resources. This document outlines the draft five-year plan for the Robson Valley Timber Supply Area (TSA) for the period January 1, 1988 to January 1, 1993. This Plan allows for the following production of timber, forage and recreation:

- The Forest Service will allow 700,000 cubic meters per year of annual harvesting. This Allowable Annual Cut (AAC) will allow for a new forest licence of 140,000 m^3 for 20 years. This volume will be harvested in the Morkill, Goat and Raush drainages. This Plan will be amended when the licence is awarded to the successful bidder.

- Forage use will be increased from 4,100 Animal Unit Months (AUMs) to 5,000 AUMs as the demand for new forage increases. This higher level of production will be achieved through enhancing range values on the McKale Community Pasture.

- Recreation opportunities including both sites, trails and dispersed recreation activities will be provided over the entire TSA land base. Roaded recreation opportunities such as Forest Service recreation sites will be provided on 220,000 hectares. Primitive recreation opportunities will be provided on 1,000,000 hectares.

To support these levels of timber forage and recreation, the Ministry has considered factors such as the available land base, the quality and location of these resources, the needs of the users, available technology, current budgets and anticipated losses of these resources to fire and pests. The Ministry has also considered the objectives of other resource agencies, including those for wildlife habitat, fisheries habitat, and watersheds.The Land Base supporting the timber forage and recreation programs is identified in Table 1, and can be summarized as follows:

- The AAC will be harvested on 233,000 hectares or 19% of the total TSA area or 44% of the Productive Forest area.

- Approximately 126,000 hectares or 26% of the Productive Forest area have been precluded from timber harvesting for environmental protection reasons. These areas are important wildlife habitat, have unstable soils, or high recreation potential, and are areas with regeneration problems.

- Over the next 20 years, only 51,000 hectares of mature timber will be harvested, leaving 121,000 hectares of merchantable mature timber and 286,000 hectares in total of old growth timber in the inventory. This amount of old growth will serve as suitable habitat for wildlife species which require old growth habitat over the next 20 years.

- The Net Land Base for this Plan includes the Robson Valley corridor from Valemount to Mt. Robson Provincial Park through to just west of McBride. The forest resources of this area are required to support the annual allowable cut of the TSA in the long term. The Robson Valley corridor requires special consideration in harvest planning. In areas where harvesting is being proposed over the next 20 years, Local Resource Use Plans will be prepared to guide Licensee Five Year Development Plans. All harvesting in this area will be managed in accordance with these plans.

- The Total TSA area includes two areas with the capability for recreation management. Management options for these areas known as the Morkill/Holmes and the Upper Raush will be developed through a Local Resource Use Planning Proccess.

This Plan also identifies a number of management strategies to be implemented to achieve the stated production levels of timber forage and recreation. These key management strategies are shown on Table 2. These strategies and others in Plan will be monitored against actual performance and will be documented in an Annual Report. The Annual Report will provide the basis for reassessing the Plan.

This Draft Plan is subject to review by all resource agencies, industrial users and the general public before its approval by the Chief Forester.

Comments and recommendations on the Draft Plan should be submitted, in writing, by April 14, 1989 to:

Regional Manager
Prince George Forest Region
Ministry of Forests and Lands
1011 - 4th Avenue,
Prince George, British Columbia
V2L 3H9

Table 1. Net Land Base Summary

Classification		Area (ha)	% of Total TSA Area
Total TSA Area		1,234,300	
Reductions to Total TSA Area			
Non-Forest Land	703,200		
Non-Crown Land	46,300		
Subtotal	749,500	749,500	60.7%
Productive Crown Forest Area		484,800	39.3%
Reductions to Crown Forest Area			
Low Sites	8,500		
Road & Rights of way	900		
Non-Satisfactorily Restocked	19,600		
Non-Commercial Brush	2,200		
Environmentally Sensitive Areas	126,400		
Unmerchantable Coniferous Types	95,400		
Unmerchantable Deciduous Types	16,500		
Subtotal	269,500	269,500	21.8%
Current Net Land Base			
Immature	43,300		
Mature	172,000		
Current Subtotal	215,300	215,300	17.4%
Additions to Current Net Land Base[1]			
Backlog Reforestation	17,700		
Future Subtotal	17,700	17,700	1.7%
Future Net Land Base		233,000	18.9%

1) Assumes incremental silviculture funding at a rate equivalent to the level of funding in the 88/89 budget and goal allocation. The amount of area is determined from District Silviculture estimates of the treatable and accessible areas, through the 1988 Regional Silviculture Planning Audit. At current levels of funding this land base will be fully reforested over 20 years.

Table 2 Summary of TSA Management Strategies (Five Year Totals, 1988-1992)

TIMBER RESOURCES

1. Timber Utilization

Criteria	Species F	C	H	B	S	Pl	Deciduous
Minimum Cutting Diameter (cm @ DBH)	17.5	17.5	17.5	17.5	17.5	12.5	17.5
Minimum Cutting Age (Years)	141+	141+	121+	121+	141+	101+	61+
Harvest Profile (%)	2	12	8	26	46	6	0

2. Harvest Operations

Licencee	Volume Planned for Harvest (m^3)	Area Planned for Harvest (ha)	Average Stand Volume (m^3/ha)
Slocan Forest Products Ltd.	971,600	3,169	306
Ziedler Forest Industries Ltd.	1,034,800	4,032	257
Hauer Bros. Lumber Ltd	59,900	258	232
Bell Pole Co. Ltd.	52,700	149	354
C.I.T.C.[1]	300,000	732	410
New Access Forest Licence[1]	560,000	2,154	260
SBFEP	652,100	2,738	238
TOTAL	3,631,100	13,232	274

3. Access Development

Criteria	Existing Roads (km)	Proposed Roads (km)	Existing Bridges	Proposed Bridges
Construction[2]	-	144.2	-	17
Maintenance[2]	236.919	144.2	38	17
Replacement	N/A	N/A	13	N/A

1) Estimated only. Based on approved AAC, expected location of operating areas and average stand volume per hectare.
2) Estimated only. Includes 24 kilometers of F.S.R. and 6 proposed bridges for the new Access Development Forest License.

Table 2 Summary of TSA Management Strategies (Five Year Totals, 1988-1992)

4. Basic Silviculture (Harvesting and Wildfire Denudation)

Criteria	Licences	S.B.F.E.P.	Ministry	Total
Site Preparation (Ha)	8,815	2,300	1,705	12,820
Planting (Ha)	9,969	2,601	1,928	14,498
Brushing and Weeding (Ha)	7,135	1,862	1,380	10,377
Seedling Requirements (000's)	10,969	2,861	2,121	15,951

5. Incremental Silviculture

Criteria	At 88/89 Funding Levels
Backlog Reforestation (ha)	4,500
Seedling requirements (000's)	4,950
Fertilization (ha)	0
Conifer Release (ha)	0
Juvenile Spacing (ha)	0

6. Maximum Level of Unsalvaged Fire Losses

# of Fires	Area Burned (Ha) Immature	Mature	Total	Volume Burned (m^3) Immature	Mature	Total
340	100	1,930	2,030	10,000	415,000	425,000

7. Maximum Level of Unsalvaged Pest Losses

Type	(m^3)
Mountain Pine Beetle	100,000
Spruce Beetle	100,000
Western Balsam Bark Beetle	17,500
TOTAL	217,500

8. Maximum Level of Unsalvaged Windthrow Losses

Type	(m^3)
Reserve	12,500
Fringe	35,000
Patches	10,000
TOTAL	57,500

Table 2 Summary of TSA Management Strategies (Five Year Totals, 1988-1992)

RANGE RESOURCES

1. Forage Utilization

Criteria	Land Act Leases	Hay Cutting Permits	Range Act Tenures	Total
Tenures	3	0	40	43
Animal Unit Months(AUMs)	1,300	0	19,910	21,210

RECREATION RESOURCES

1. Sites and Trails

Criteria	Existing	Constructed	Maintained
Sites (number)	11	3	14
Trails (km)	102	33	135

2. Recreation Studies

Criteria	Number
Recreation Corridor Studies	1
Local Resource Use Planning Processes	2
Recreation Resource Analysis	1

Figure 1. Robson Valley TSA - Key Map for Province/Region/TSA

1.0 INTRODUCTION

This Resource Management Plan has been prepared by Forest Service District and Regional Staff in cooperation with the Forest Industry and other resource management agencies. Its purpose is to guide the management of the forest and range resources in the Robson Valley TSA for the next 5 years. It provides a major coordinating and integrating mechanism for guiding resource management practices within the TSA.

The plan was developed within the constraints of current funding levels and can be implemented without changes to the Ministry of Forests budget. It is based on the timber supply analysis options set out in the McBride Timber Supply Area Options Report (December 1987). Based on the report the Chief Forester determined an interim Allowable Annual Cut (AAC) for a term of five years beginning January 1, 1988, or until prior revision. Approval of this Plan by the Chief Forester will authorize the AAC.

The Plan is organized into eight chapters. The interrelated purposes of Chapters 2-8 and the appendices that follow are introduced here.

Chapter 2.0 summarizes the major forest management issues and public concerns that have been raised through this planning process. This section shows how these issues have been addressed and directs the reader to appropriate sections in the Plan.

Chapter 3.0 shows how the plan has provided for the objectives and goals of other resource agencies.

Chapter 4.0 presents a summary of the present and future resources which the Forest Service has the jurisdiction to manage. This chapter presents production targets for timber for the next 20 years and establishes an annual allowable cut (AAC) for the next 5 years. Forage and Recreation production targets are also presented for the next 20 years.

Chapter 5.0 presents the management strategies for Timber, Forage and Recreation to meet the production targets stated in Chapter 4.0.

Chapter 6.0 presents further direction to plans that cover smaller areas of the TSA.

Chapters 7.0 and 8.0 explain how management direction will be implemented, how implemented activities will be monitored and evaluated, and how the plan can be kept current in light of changing conditions or new information.

The appendices (9.0) contain information on the Robson Valley 20 Year Operating Areas, a Terms of Reference for Local Resource Use Plans, supporting maps, a reference and a glossary.

This Plan has a 5 year term, beginning January 1, 1988, and, if necessary will be revised prior to December 31, 1992.

1.1 The Robson Valley Timber Supply Area

The Robson Valley TSA is one of six TSAs in the Prince George Forest Region, located in the southeastern corner of the region (Figure 1). The TSA is administered by the McBride Forest District and is subdivided into ten supply blocks (Figure 2). The TSA includes the villages of McBride and Valemount and a number of rural residences between these communities.

The forest industry: logging, sawmilling and other wood processing are the economic mainstay for the TSA. The forest industry is represented by a veneer plant and studmill in McBride, a sawmill and shingle mill in Valemount, and several small manufacturing facilities. In addition there is an expanding Small Business Forest Enterprise Program and a Woodlot Licence Program.

Agriculture supplements the forest based economy in the valley bottoms of the Fraser and Raush Rivers. Utilization of the crown range resource is relatively minor; about 0.4% of the provincial and 3.0% of the Prince George Region crown range resource.

Tourism and Recreational values within the TSA are growing, especially along the main corridors of Highway 16 between Prince George and the Alberta border, and Highway 5 from Tete Jaune south to Kamloops. Although most recreational use takes place in Mt. Robson and Jasper Parks, where formally regulated recreation opportunities exist, dispersed recreation opportunities on Provincial Forest Lands are managed for snowmobiling, ski-touring, hiking, horseback riding and camping. Opportunities for these activities are presently in abundance in areas accessed by road and in remote areas. Opportunities for fishing, boating and lake oriented recreation activities are minimal in the TSA, and as a result, there is a high demand on the few areas providing these opportunities. Viewing along the major highway corridors is an important recreation activity in the TSA and landscape values are a major factor in the public's enjoyment, for residents and visitors alike. Other resource uses in the TSA include trapping and guide outfitting.

Although the TSA's economy will continue to be primarily forest based, growth is expected in the agriculture, tourism and service industries. Growth of all these industries will have to be balanced in order to broaden the socioeconomic needs of the Robson Valley residents.

Figure 2. Robson Valley TSA - Key Map for TSA/Supply Blocks

2.0 FOREST MANAGEMENT ISSUES AND PUBLIC CONCERNS

All Forest Service plans and planning processes are carried out in accordance with established policies, the Ministry's Resource Planning Manual and the Public Involvement Handbook. These policies and procedures provide the forest industry, the public and other resource agencies with the opportunity to view, evaluate and comment on the hierarchy of resource use plans that the Ministry maintains. These plans include Resource Management Plans for TSAs and TFL Management and Working Plans, Local Resource Use Plans, and Resource Development Plans.

During the preparation of this Plan a number of management issues and public concerns were identified regarding the stewardship of the Crown resources in the Robson Valley TSA. This plan addresses some of these issues and concerns, and leaves others outstanding. This section shows how this Plan addresses and responds to these issues and concerns and directs the reader to appropriate sections of the Plan.

2.1 Timber Resource Issues and Public Concerns

What Boundary changes are proposed for this Resource Management Plan?

Background
Prior to the initiation of this planning process, the Betty Wendle Supply Block (J) was included in the Quesnel TSA in the Cariboo Forest Region but was not managed and included within the Quesnel TSA AAC. The area of this supply block is approximately 52,000 hectares of which nearly 10,000 hectares is merchantable, and 3,300 hectares is available for harvest over the next 20 years.

Response
Access to the merchantable timber within this supply block will be developed through the Milk River drainage. Currently Ziedler Forest Industries are planning to harvest in this area, in conjunction with the SBFEP, starting in 1993. Section 6.2, 6.3 and Appendix 9.1 shows the harvest schedule for proposed operations in this area.

How will the productive forest land base be maintained for future timber resources?

Background
Continued erosion of the productive forest land base to alienations for agriculture, parks, settlement, mineral extraction, transportation and energy transmission has been significant since the last TSA planning process in 1980. The Upper Fraser Crown Land Plan completed in 1986 resulted in approximately 4,500 hectares becoming unavailable for long term forest production. Provincial Forest boundaries are reviewed regularly to determine if the land within the boundaries is classified as forest land for timber production, grazing or outdoor recreation. Forest land is excluded from provincial forest status if it has its greatest socioeconomic benefit in other uses.

Response
The Ministry of Forests acknowledges three categories of crown land, from which timber may be disposed to the forest industry. They are:

1) Crown Land within a Provincial Forest.

2) Crown Land outside a Provincial Forest and subject to a Crown Land Plan.

3) Crown Land outside a Provincial Forest (no Crown Land Plan).

Section 6.1 addresses the mechanisms for disposition of timber on these three categories of crown land.

In addition, the Canoe and Robson Provincial forests are scheduled for review over the term of this Plan to identify new lands available for forestry and new lands available for agriculture and settlement.

What is the most appropriate Annual Allowable Cut and Apportionment?

Background
The rate of timber harvesting is determined by the Chief Forester. The apportionment of the harvest to tenures is determined by the Minister of Forests. These decisions reflect a number of technical and socioeconomic considerations. The level of timber harvesting not only affects the immediate short-term economics of companies and individuals engaged in the forest industry, but it also affects range, recreation, wildlife and other uses generated from the forest. The present level of timber harvesting can also affect long-term harvesting levels. At issue during the planning process is the level of harvest, its effect on economic opportunities and local manufacturing and its related impact on non-timber resource uses in the TSA.

The timber supply profile also indicates a relative oversupply of timber older than 140 years. Approximately 80% of the TSA's Net Land Base (Table 1) is mature. The rate of harvest must consider this timber supply profile.

Response
It is the policy of the Ministry to encourage the most efficient utilization of the timber resource to maximize socioeconomic benefits to local communities. This Plan proposes an increase in the rate of harvest to 700,000 m^3 to allow for the utilization of cedar-hemlock stands and to encourage access into undeveloped drainages of the TSA. A 60,000 m^3 non-replaceable 10 year forest licence has been awarded and if successful over the term of the licence, will demonstrate the technology and markets available for cedar-hemlock utilization. In addition, a non-replaceable 20 year forest licence will be advertised for 140,000 m^3 to encourage road construction.

It is the policy of the Ministry that any reductions in harvest will be phased in over a long time period, to avoid serious economic impacts on business and local economies.

Therefore, the rate of harvest will be reduced, (after the expiry of the cedar-hemlock forest licence, and the access development forest licence), to 500,000 m^3 to ensure that socioeconomic benefits from the timber resource will continue.

Within the replaceable AAC of 500,000 m^3, changes to the apportionment of this AAC may lead to an increased diversification of licensee commitments and encourage small business investment in the forest industry. Legislation allows for the removal of 5% from the established forest industry to be sold through the Small Business Forest Enterprise Program (SBFEP) to encourage new manufacturing facilities capable of producing value-added forest products.

The rate of harvest has also been set recognizing the timber supply profile of the TSA. Setting a rate of harvest at the Long Run Sustained Yield (LRSY) of the TSA would lead to a high level of unsalvaged losses because of the age class imbalance. The AAC has been set at 700,000 m^3 which is 38% higher than the LRSY. This rate of harvest will replace the over mature forest with a more thrifty growing young forest. The production targets in Section 4.1 address this issue.

What timber will be utilized by the Forest Industry?

Background

The merchantability of problem forest types including deciduous species, cedar and hemlock was at issue at the beginning of the planning process. To date these timber types have been included in the AAC but have not been utilized to any great extent. Overmature, decadent cedar and hemlock stands occupy some of the best growing sites in the TSA. Conversion of these stands to young thrifty growing cedar or more preferred spruce or fir will lead to improvements in the productivity of these sites. Public concerns have also been expressed on the standard of utilization on existing licensee harvesting areas.

Response

The inclusion of significant areas of problem forest types into the net land base of the TSA was assessed during the planning process. As discussed in the McBride TSA Options Report, the inclusion of these types could sustain an increased harvest rate of 700,000 m^3 indefinitely. Except for cedar, present licensees cannot utilize these unmerchantable stands, and therefore they will still remain out of the Net Land Base for this Plan. These stands still represent a management opportunity to sustain the current rate of harvest at future Plan revisions.

Additionally, for each licencee's operating area, a description of what is included in the net land base of each planning cell is provided. Licencee's development plans will be monitored on this basis and they will be expected to harvest the timber supply profile of the net land base in each planning cell. Section 6.2, 6.3 and Appendix 9.1 show the volume of timber that is merchantable, planned for harvest, and also shows the scheduled volume as an expression of the total volume in the operating area. Further detail on the specific forest types within each planning cell planned for harvest can be found in supporting information at Region or District Offices.

How will steep and/or sensitive slopes be harvested?

Background
Many sensitive slopes in the Robson Valley TSA have merchantable stands growing on them. These areas have not been harvested to date, but may be considered for harvesting in the near future. As a result of harvesting, reduced site productivities may occur due to:

a) excessive skid trail development;

b) improper skid trail construction;

c) harvesting at the wrong time of year; and

d) using improper harvesting systems for the site.

Since some of this timber is supporting the present AACs, and since the demand for timber is forcing licensees into sensitive terrain, there is a need to develop guidelines for harvesting sensitive slopes.

Response
The Prince George Region Timber Management Standard Operating Procedures identifies the steep slope harvesting guidelines which are applicable to the Robson Valley TSA. As part of this planning process, the steep slope harvesting guidelines have been used to develop the type of harvesting system which is appropriate for local areas of the TSA. The harvesting system has been used to develop estimates of Delivered Wood Costs. Section 6.2, 6.3 and Appendix 9.1 identify the areas that the forest industry will operate in over the next 20 years. The percentages of the volume planned for harvest by harvest system are identified in this section.

How will not accessible areas of the TSA be accessed?

Background
Historical road development in the TSA has left major areas of merchantable timber not accessed (ie: Supply Blocks A, I, J and the eastern portion of Supply Block H). The geographic distribution of major stands of various species within these supply blocks were to be reviewed as part of setting access and harvest priority objectives. Additionally, the rate of assumed access construction implied in the last Planning process has not, by and large, come to pass, over the last 8 years since the estimate was prepared. In consideration, of the very significant costs to obtain access in the TSA, this present Planning process should focus on the effect of not roading presently inaccessible areas.

Public concerns have also been expressed on the issue of returning government funding for main road construction to help disperse the harvest out of the main Robson Valley.

Response
As part of this Planning process, estimates of delivered wood cost have been added to the Forest Inventory. A substantial component of the Delivered Wood Cost are Road Development costs. With these costs added to the inventory, timber supply analyses have been used to estimate the impact of roading presently inaccessible areas. As documented in the McBride TSA Option Report, if delivered wood costs are restricted to remain within $25.00 or less (a level which assumes very little road construction), the AAC of the TSA would fall to around 200,000 m^3. To avoid this AAC reduction of 60%, and its disastrous socioeconomic consequences, this Plan is based on a $35.00 m^3 threshold. This implied level of road construction will maintain the AAC for at least 70 years.

The twenty year operating areas (Section 6.2, 6.3, Appendix 9.1 and TSA Map #2) have identified the areas of the TSA that will be accessed over the next 20 years. In general, most of the not accessed areas in Supply Blocks A, I, J and H will be developed over the next 20 years by the existing licensees. These areas have delivered wood costs on average above $25.00/$m^3$ and less than $35.00/$m^3$. Only a few drainages will remain not accessed over the next 20 years. The Upper Goat, Main Morkill and the Raush drainages will be developed once the access development Forest Licence is awarded to the successful bidder. These areas have delivered wood costs in the order of $34.00/$m^3$ and will be expensive to develop.

Government Forest Policy states that timber harvesting privileges include rights to harvest the timber in exchange for developing access to the timber and replacing the forest to required standards. In specific instances such is the bridge over the Fraser River at Crescent Spur, government has borne the cost through Section 88 stumpage credits, but in the future the forest industry will bear most road construction costs.

What Silviculture Programs are being undertaken?

Background
At the start of the planning process, a shortage of suitable planting stock was limiting silviculture goals. At issue was whether basic silviculture programs were being achieved. Public concerns have also been expressed on the issue of a long-time until green-up of reforested cutblocks, and the use of herbicides to control brush encroachment.

Response
Like Road Development costs, government policy states that the forest industry is now responsible for ensuring basic silviculture is attained. Shortages of suitable planting stock will be alleviated in the future as the private sector expands nursery production in-order to fill licence orders for planting stock.

The green-up process following logging is naturally a slow process. Following logging, site preparation and artificial and natural regeneration techniques are done to maximize the growth rate of newly established seedlings. On average, it can be expected that the area will have greened up and the seedlings will have grown to a height of 2.5 meters by around 20 years. Herbicides may be used to reduce brush encroachment in certain areas. Brush encroachment is common on the most productive sites and unless controlled may cause plantation failures. Herbicide use will be in accordance with Ministry of Environment regulations on the registration of herbicides and the issuance of permits. The silviculture strategies to renew the forest after harvesting or wildfire are documented in Section 5.1.3.

Of the 21,800 hectares of NSR and NCBr, approximately 17,700 hectares is scheduled to be reforested over the next 20 years at current levels of funding. This amounts to an annual reforestation program of approximately 900 hectares. These incremental silviculture programs are documented in Section 5.1.5.

What protection programs will be undertaken?

Background

Significant volumes of timber may be lost to beetle infestations and fire losses due to a lack of road access. Historical timber losses to insects and windthrow have significantly exceeded previous estimates of unsalvaged losses used in the 1980 planning process. These losses are estimated at nearly 90,000 m^3 per year from bark beetles and 105,000 m^3 per year from fire for a total of near 200,000 m^3 per year. This amounts to approximately 28% of the TSA AAC. At issue is the unsalvaged losses from insect and fire, their impact on the timber supply, and the programs to be implemented to minimize these losses.

Public concerns have also been expressed on the issue of smoke pollution resulting from prescribed burning.

Response

Road development to the far reaches of the TSA is expected to minimize the amount of killed timber that cannot be salvaged due to the present lack of road access. Option III of the McBride TSA Options Report has been chosen as a basis for this Plan. Therefore it is expected that unsalvaged losses of less than approximately 140,000 m^3 per year will be acceptable.

In accordance with Forest Service smoke management policy the District Manager will identify smoke sensitive areas in the TSA, and will designate these areas as such. Within these smoke sensitive areas, all permit burning will be managed to reduce excessive smoke accumulation. Notwithstanding the District Manager's ability to control smoke accumulation within the TSA, smoke from permit burning in the Kamloops and Cariboo Regions cannot always be controlled for the benefit of people in the Robson Valley. The topography of the area causes smoke from permit burning outside the TSA to accumulate in the Valley. The District Manager will maintain communication with other Districts to monitor burning programs outside the TSA.

Section 5.1.4 identifies the protection strategies which will minimize fire and insect losses and which will control smoke emissions.

What inventory programs will be undertaken?

Background

An inventory of the forest resources is required for forest management purposes. The present inventory is based on Public Sustained Yield Unit (PSYU) surveys carried out between 1967 and 1971. The inventory from these surveys has been updated for depletion to the end of 1986 for the Timber Supply Area Analysis, and the forest cover polygon descriptive information has been projected to 1986. This inventory is updated and projected annually.

Information deficiencies identified during the planning process include the lack of integration of the ecosystem classification system with the forest inventory, and "managed-stand yield tables" for silviculture treatments. These concerns restrict silviculture decision-making and their effect on the long-term timber supply. Concerns have been expressed that the inventory site classification system underestimates the potential yield of the site, whereas an ecosystem classification approach with managed stand yield tables will more accurately estimate the regenerated stand yields.

Public concerns have also been expressed on the issue of the accuracy of the forest inventory, and the assumptions used in timber supply analysis. Suggestions have been made, that decisions on the rate of harvest should not be made without an accurate long-term forest inventory.

Response

The purpose of resource management planning and timber supply analyses is to seek the best broad direction in forest management. In any planning process, there will always be a question of uncertainty due to changing external environmental influences. Since planning is recursive, (ie: cyclical) there should be no reservation or delays in charting a course based on the best available information. Therefore, the inventory which this Plan is based upon has been used to develop the plan and the above weakness in the inventory will be improved on.

Specifically, bio-geoclimatic units in the TSA are presently being digitized and will represent a layer of information on the Robson Valley TSA inventory. In addition the Forest Service is working on improving managed stand yield tables and site classification techniques in regenerated stands. This information when available will be used in future updates to the Robson Valley TSA Resource Management Plan. Section 5.4 addresses these issues.

2.2 Range Resource Issues and Public Concerns

Will the Range Program have difficulty responding to the projected demand for Crown Range at current funding levels?

Background

Prior to 1982, demand for Crown Range Use increased by approximately 15% annually. Over recent years, range use has actually declined due to the depressed beef market. However, it is expected the demand will return, and that the projected demand will exceed current developed capacity within 5 to 7 years. At issue is whether current government programs and strategies can achieve the range production targets at current funding levels.

Response

The 5 year production target cannot be achieved at current levels of range development funding. Capital expenditures for range development have in the past come exclusively from ARDSA funding sources. Funding for renovation and maintenance of developed pastures has come from the Ministry of Forests and from Livestock Associations and individual tenure holders through a user-pay system. Without increases in government funding, either through ARDSA or through the Ministry of Forests Five Year Program, neither the 5 year nor the 20 year production target will be achieved. This issue remains outstanding.

How will the range program be integrated with timber harvesting, recreation and wildlife management programs?

Background

Currently, the range program is managed at the resource development planning level. Referrals of licencee development plans acknowledge range use and activities are carried out to achieve specific range concerns. However, planning for range use at the strategic planning level has not been carried out to date, partly from the absence of a Range Inventory.

Integration of the range resource also interfaces with reforestation objectives in recently harvested and reforested plantations. Grazing cattle can trample young seedlings. Cattle control will limit the amount of available forage and will result in increased grazing costs (ie: more fencing guards). If livestock are to be excluded from transitional range areas (ie: recently harvested areas used for grazing but eventually reforested to plantations), then more community pasture must be developed to satisfy range demand. There are several interested ranchers in the TSA who could use and want crown range.

The control of thistle is becoming more important in the TSA. This weed is spreading very rapidly across most range use areas in the TSA. Also of concern is knapweed which is known to occur in spot infestations, and could become a potential problem.

Response
District staff have incorporated the range resource in the Forest Inventory. Over the next 5 years, this inventory will provide the required information for range planning at the resource development planning level. However, if future funding can be provided for a range inventory, planning for range use at the strategic planning level will be greatly benefited.

Integration of specific range/silviculture interactions must occur at the resource development planning levels. However, if that strategy means excluding livestock from transitional range areas, then the McKale community pasture must be developed further.

Weed control of knapweed and thistle, although becoming a significant issue, will be minimized through the range maintenance and enhancement strategies in Section 5.2.2.

2.3 Recreation Resource Issues and Public Concerns

What emphasis will be given to Landscape management?

Background
Maintaining a natural or nearly natural appearing landscape places restrictions on the amount, type, and frequency of timber harvesting in an area.

A visual inventory and analysis of the Robson, Valemount and McBride valleys has been completed. Visual quality objectives have been established in these corridors in a broad fashion. More detailed analyses are required at several viewpoints. At issue, is that unrestricted harvesting in these areas may lead to unacceptable views. Management of the visual resource in these valleys is an important objective.

Response
The Forest Service is committed to establishing Local Resource Use Plans in the Robson Valley in areas that are scheduled to be harvested over the next 20 years. Through that planning process, landscape inventories and analyses will be done to refine earlier efforts in this regard. Visual quality objectives will be used to produce guidelines and direction for timber harvesting. Section 6.1 addresses this issue.

How will Forest Companies become involved in landscape planning and recreation site and trail development and maintenance?

Background
Most licencees and the SBFEP have not to date seriously addressed landscape management in development plans. Lack of public input into development plans has been partially responsible for expressed public concerns for scenic resources in the Robson Valley, resulting in incomplete integration of the recreation program.

Response
As suggested earlier, Local Resource Use Plans in the Robson Valley will provide guidance and direction to timber harvesting licences in the Robson Valley. All timber harvesting plans will be open for a public review prior to District Manager approval. With regard to Forest Company involvement in recreation site and trail development and maintenance, no individual licencee recreation projects have been proposed. Section 5.3 addresses this issue.

How will the Forest Service provide for a variety of recreation opportunities?

Background
Recreationalists may have one or more special niches into which their feelings on recreation experience fall. Some people wish to see more developed recreation sites for vehicle camping, while others prefer tent camping in isolated dispersed recreation sites. Still others seek a wilderness experience, carrying their camping needs on their backs.

The Forest Service maintains an inventory of recreation opportunities in the form of a features inventory (ie: lakes, sensitive visual areas etc.) and a Recreation Opportunity Spectrum (ROS) which identifies remote natural areas as compared to roaded areas. Along with recreation demand estimates, the Forest Service seeks to provide a diversity of recreation opportunity including wilderness experiences.

Response
As road access to harvest timber increases, the amount of remote natural area decreases and the amount of roaded area increases. Projections of recreation opportunity have been made for the next 20 years. The amount of remote natural area is projected to decrease to 70% of the Total TSA area from the current 82% of the Total TSA area. Conversly, the amount of roaded area is projected to increase to 30% of the Total TSA area from the current 18% of the Total TSA area. These supply estimates should accomodate expected demands for the diversity of recreation opportunities in the Robson Valley TSA.

Recently, wilderness management in Provincial Forests has become a mandate of the Forest Service. The Forest Service has announced a Wilderness Policy Paper and a Provincial Action Plan for the identification, designation and management of wilderness areas. This Resource Management Plan identifies areas with the capability for recreation management through the Resource Use designation process in Section 3.1. These areas are shown on TSA Map #1. Management options for these areas will be developed through Local Resource Use Planning Processes and will be subject to approval of Provincial Policy and Procedures on wilderness management.

Section 3.1, 4.3, 5.3 and 6.1 addresses the recreation program of the Forest Service in the Robson Valley TSA.

2.4 Fish and Wildlife Resource Issues and Public Concerns

What harvesting prescriptions will be implemented to maintain wildlife values?

Background

The number of passes and the delay between successive timber harvests is a concern to maintaining big game populations. The Robson Valley TSA contains grizzly and black bears, deer, caribou, elk, and moose populations. Timber management activities will affect the amount, quality and distribution of habitat available to wildlife populations. This is especially true on winter ranges where road access for timber management is easier and more economical.

Response

A "cut/leave" model has seen used to determine the amount of "first pass" available in any given time period, the time until second pass can start and the number of passes required to harvest the merchantable timber. Where the maintenance of wildlife populations in local drainages of the TSA is paramount, the "cut/leave" prescriptions that maintain these wildlife values will guide future development of the drainages. Section 6.2, 6.3 and Appendix 9.1 contain the harvest prescriptions for these local drainages in the TSA. These prescriptions identify, cutblock size, shape and reserve width between cutblocks, identify the number of passes, and the time until second or third passes, can commence.

How much "old growth" will remain in the forest inventory for wildlife purposes?

Background

The harvesting of "old growth" and the effect on wildlife species which depend on it is a significant issue. Woodland Caribou habitat and the rate that this timber is harvested is important, to ensure that the habitat requirements for this species is maintained.

Response

Approximately 80% of the timber supply in the TSA is overmature from a forestry point of view but acts as "old growth habitat" for wildlife species. This timber occupies approximately 337,000 hectares. Because of environmental concerns, and merchantability, not all this timber will be harvested in the future. The old growth that supports the rate of harvest occupies approximately 180,000 hectares or 53% of the total old growth in the TSA. Over the next 20 years, approximately 51,000 hectares or 15% of the total old growth in the TSA will be harvested. This timber will be harvested in the operating areas identified in Section 6.2, 6.3 and Appendix 9.1. This schedule indicates that approximately 85% of the total old growth in the TSA will remain unharvested over the next 20 years. This timber should serve as caribou habitat requirements over that period.

Furthermore, TSA Map #1 identifies Forest Use Designations for the TSA. As suggested in Section 3.1, the Wildlife Emphasis zone is applicable to those areas where a third pass harvesting system is employed and at least 20% of the total harvest is deferred for the third pass.

How will community and domestic watershed values be respected?

Background
Dominion Creek and Swift Creek have been recognized as the watersheds for McBride and Valemount respectively. All resource use plans in these areas must recognize their importance. Other private domestic watersheds must also be recognized in licencee development plans.

Response
The "harvesting prescriptions" for local areas of the TSA (ie: planning cells) have been developed recognizing the importance of watershed values. The first pass harvest will not result in more than 30% of the total forest cover taller than 10 meters being depleted at any one time. This guideline will ensure that water quality and quantity will be protected and the regulation of both will be ensured.

In the Swift Creek Watershed, 50,600 m^3 has been identified as available for harvest in the first 20 years. This is approximately 10% of the gross timber supply. However, the entire 50,600 m^3 will not be harvested since the planned harvest will not exceed 32,700 m^3 which is only 7% of the gross timber supply.

In the Dominion Creek Watershed, 61,400 m^3 has been identified as available for harvest in the first 20 years. This is approximately 9% of the gross timber supply. According to the 20 year operating areas, no licencee or the SBFEP will schedule harvesting in this area.

For other important domestic watersheds, a similar harvesting prescription has been identified. Section 6.2, 6.3 and Appendix 9.1 contain all the areas proposed for harvest over the next 20 years. The "netting down" of the gross to an available supply is identified in the tables for each operating area.

Furthermore, specific measures to protect licenced water resources will be defined through Local Resource Use Plans and/or Resource Development Plans in consultation with the Ministry of Environment.

How will harvesting affect snow pack, water yields and water quality in the Fraser River Watershed?

Background
Long term harvesting of the forest cover in the upper elevations of the Robson Valley TSA may influence snow pack, water yields and water quality in the Fraser River Watershed. The effect that continual harvesting has on the watershed was at issue at the beginning of the planning process.

Response
Other than the above guideline which influences the amount of first pass harvesting in the TSA, this Plan has not addressed the cumulative impact that long-term harvesting may have on the entire Fraser River Watershed. Research on this issue is required before any further guidelines or refinements to harvesting prescriptions are developed.

3.0 OTHER RESOURCE USE OBJECTIVES

The Forest Service must plan the use of the forest range and recreation resources, in accordance with Section 4c of the Ministry of Forests Act, to ensure that natural resource values are integrated with timber harvesting, grazing and outdoor recreation. In part, integration occurs by reducing the gross timber land base to a net timber land base which supports the timber harvesting production target and AAC. The Current Net Land Base is 215,300 hectares which is 44% of the Productive Crown Forest Area of 484,800 and 17% of the Total TSA area of 1,234,300 hectares (Table 1). In addition, integration occurs through constraining the timber harvest in local areas (planning cell) of the TSA to achieve wildlife, recreation and watershed management objectives. Harvesting prescriptions are identified to reflect the size, and shape of harvesting openings, the distance to adjacent harvest openings, the number of harvesting passes and the length of time between harvesting passes. These prescriptions have the effect of limiting the available timber supply over the next 20 years. These prescriptions are developed to maintain or enhance wildlife and recreation values, and to minimize hydrologic impacts within watersheds. In areas of important wildlife values or recreation concerns, the harvesting prescription is designed by the staff associated with the management of these resources.

3.1 Resource Use Designation

The Forest Service is developing a provincial land use zoning system for use in Resource Management Plans for TSAs and Tree Farm Licence Management and Working Plans (TFL MWPs). This zonation system communicates resource use priorities with other agencies and the public. TSA Map #1 shows the resource use designation in the Robson Valley TSA. Each area designated on the map is assigned a general prescription for appropriate uses which are described below. These areas consist of resource emphasis categories that identify resource priorities and operational constraints.

The following is a brief description of the Resource Use emphasis categories in the TSA:

Zone 1 - Timber Production Emphasis

This zonation is applied to areas suitable for timber production. The emphasis will be to manage these areas to provide a high level of timber harvesting, using a full range of silviculture practices to regenerate harvested areas. This emphasis will be in areas not subject to high environmental concern and in areas that, are economically accessible and merchantable. Other resource uses that have minor importance within these areas would be conserved through appropriate harvesting and silviculture strategies.

Within this category three sub-zones are applied to identify the amount and rate of harvest within these areas:

Zone 1A Two Pass Harvesting: generally means, a rate of harvest where the merchantable timber is removed in two time periods. As little as 50% and as much as 95% of the merchantable timber may be removed in each pass, and the time period between passes can be as short as 15 years and as long as 40 years.

Zone 1B Three pass Harvesting: generally means a rate of harvest where the merchantable timber is removed in three time periods. As little as 33% and as much as 50% of the merchantable timber may be removed in each pass, and the time period between passes can be the same as Zone 1A.

Zone 1C Four Pass Harvesting: generally means a rate of harvest where the merchantable timber is removed in four time periods. Less than 33% of the merchantable timber will be removed in each pass and the time period between passes will be the same as Zone 1A and 1B.

Means to achieve these harvesting objectives could include changing cutblock size; regular or irregular cutting boundaries; or changing reserve block sizes, between cutblocks.

Zone 2 - Wildlife Emphasis

This zonation is applied to areas where important wildlife values are present. The emphasis in these areas would be on wildlife management and the need to create and maintain a diversity of habitats to perpetuate healthy populations. The emphasis will be in areas that support current moose, deer, bear, and caribou populations. Timber harvesting will be scheduled in these areas, but harvesting would only be allowed to the extent that at least three pass harvesting is employed and at least 20% of the total harvest is deferred for the third pass.

Zone 3 - Recreation and Viewing Emphasis

This zonation is applied to areas that have significant scenic features or in areas that have recreation emphasis that supercede timber harvesting. Timber harvesting will be scheduled within this zone, but landscape concerns will usually dictate the type and level of harvesting. This zonation mainly occurs surrounding populated areas or along highway corridors. Therefore this zonation does not appear on TSA Map #1 until the Local Resource Use Planning Processes in the Robson Valley are concluded. At that time suitable areas will be designated as having a recreation and viewing emphasis.

Zone 4 - Single Land Use Designations

This zonation applies to legally designated areas that preclude timber harvesting such as wilderness areas, parks, or ecological reserves.

Zone 5 - Deferred Study Areas

This zonation applies to areas where the resource emphasis is questioned. A local resource use planning process would develop an appropriate management emphasis (Zones 1-4) for each planning cell. Until these plans are concluded, Zones 1 - 3 management emphases will apply, as interim emphases only.

Within this category two sub-zones are applied to identify the type of Local Resource Use Planning Process to be applied:

Zone 5A Robson Valley Local Resource Use Plans: Significant scenic features along the Highway corridor from Valemount to Mount Robson and to McBride require special, more detailed planning to occur at a local level to determine more area-specific integrated resource use guidelines, before harvesting can proceed.

Zone 5B Recreation Management Areas: Some remote areas with recreation management capability have been identified to be addressed through a local resource use planning process. These include areas that are predominately in the Primitive or Semi-primitive Recreation Opportunity Spectrum (ROS) classifications, (ie remote natural areas). These areas are usually upper elevation alpine areas, or they do not have significant timber volumes or will not realize realistic timber values over the next 20 years.

3.2 Fisheries and Wildlife

This Plan's timber harvesting strategies over the next 20 years have been developed through consultation with the Ministry of Environment. The Fish and Wildlife staff of the Environment Ministry, determined how timber harvesting should be carried out to meet fish and wildlife objectives. Preferred opening sizes, shapes, reserve widths between openings, and harvesting delay periods have been specified for forest harvesting. Further, a guideline was developed to ensure that a minimum forest cover will be maintained to provide thermal cover for wildlife and to regulate watershed runoff. Second or Third pass harvesting will be allowed in areas where the reforested plantations have reached a height of 2.5 meters or lower heights if deemed acceptable by Fish and Wildlife staff of the Ministry of Environment.

Through reductions to the Crown forest land base, for Environmentally Sensitive Areas (ESAs), the timber harvesting production targets allow for the protection of important Fish and Wildlife resources. Approximately 2 870 ha of important habitat, designated as Environmentally Sensitive Areas in the forest inventory, have been precluded from timber harvesting.

Map #2 identifies areas proposed over the next 20 years for harvesting. Within these areas, fisheries and wildlife objectives have been considered in the choice of a "harvesting" prescription for each planning cell. Where high wildlife and fisheries values are present, the "harvesting" prescription is based on Fish and Wildlife staff input. These prescriptions, and their resource emphasis for each planning cell in each operating area, are identified in Section 6.2, 6.3 and Appendix 9.1, and for the entire TSA, these prescriptions are associated with Zone 2 on Map #1.

Fish and Wildlife objectives in specific areas of each planning cell, will be accommodated through Local Resource Use Plans and/or Resource Development Plans and will be referred to the Ministry of Environment.

3.3 Water

The current plan protects water resources for local areas of the TSA by ensuring that the timber harvesting strategies over the next 20 years retain at least 30% of the gross productive forest area in timber higher than 10 meters. Specific measures to protect licenced water resources will be defined through Local Resource Use Plans and/or Resource Development Plans, in consultation with the Ministry of Environment.

3.4 Heritage Resources

The current plan recognizes the need to protect important archeological and historical sites. Where they are identified, specific measures to protect them will be defined through Local Resource Use Plans and/or Resource Development Plans, in accordance with the Memorandum of Agreement between the Forest Service and the Heritage Conservation Branch of the Ministry of Municipal Affairs, Recreation and Culture.

3.5 Parks and Ecological Reserves

The current plan excludes Parks and Ecological Reserves from the Net Land Base. However, no provision is made in the production targets for the establishment of additional parks or ecological reserves. Proposals for any additions will be assessed by the Ministry of Parks with input from the Forest Service. If and when additional Crown forest land is allocated to parks or ecological reserves, adjustments to the Net Land Base and production targets will be made at the next Plan update.

3.6 Settlement

The current plan has provided for past dispositions of Crown land to agriculture and other settlement by excluding areas that are not included in Provincial Forests but have not been updated into the Forest Inventory. This applies to 4,500 hectares of Crown land lost to timber and forage production as a result of the Upper Fraser Crown Land Plan.

The disposition of additional Crown land to agriculture or other settlement uses has not been provided for. The Forest Service will provide input into the Lands Regional Office of the Ministry of Crown Lands with respect to specific Crown land disposition proposals, and will work with other concerned agencies to periodically review Provincial Forest boundaries in the Robson Valley TSA. Section 6.1 identifies the Provincial Forest reviews that will be undertaken in the Robson Valley TSA over the term of this plan.

4.0 PRODUCTION TARGETS

In order to establish management objectives for the plan, the Forest Service analyzes the resources, and forecasts future supplies, given current uses and management practices. Through these projections the ministry establishes production targets for timber, forage and recreation.

4.1 Timber

Timber supply analyses, which project the long term consequences of forest management programs, form the basis for establishing timber production targets.

These analyses indicate, that the overall timber harvesting program can be increased from its presently approved level of 560,000 m^3 to a higher level of production. This level of production is based on Option III of the McBride Timber Supply Area Options Report. The present forest industry will develop increased access into the far reaches of the TSA and over the term of this Plan, the forest industry will begin to utilize lower volume forest types, and higher cost timber.

In addition to increased access development and harvesting of poorer quality stands, the timber harvesting production target is based on other strategies, including utilization standards, priority cutting ages, the location of 20 year operating areas and silviculture and protection management strategies. These strategies are specified in Section 5.1

The timber production targets for the TSA are shown in Figures 3-6. Figure 3 shows a quantitative description of the harvest, assuming present utilization and merchantability standards and silviculture investment are continued. Figure 4-6 shows a qualitative description of the harvest in terms of species, average stand volume and delivered wood cost of the harvest.

As shown in Figure 3, the target is to harvest 700,000 m^3 per year until 1997, and 640,000 m^3 until 2007. These reductions are due to the expiry of the forest licence for the utilization of leading cedar-hemlock stands in 10 years, and the expiry of the forest licence for access development in 20 years. After 2007, the harvest will continue at 500,000 m^3 until 2057 before declining to a low of 404,000 m^3 per year by 2077. By year 2107, the rate of harvest can be maintained at 505,000 m^3 per year.

Figure 4 shows the expected species planned for harvest. The dominate species harvested will be spruce and balsam. The spruce component is expected to increase from its present 45% to approximatley 55% over the next 20 years. The Balsam component is expected to remain static at around 26%. Cedar and Hemlock species are forecasted to decrease from 20% to around 10% after the expiry of the Cedar-hemlock utilization licence. Fir and Pine are expected to remain static at around 2% and 6% respectively.

Figure 5 shows the expected average stand volume planned for harvest. Over the next 20 years the average stand volumes harvested will remain constant at approximately 275 m^3 per hectare.

Figure 6 shows the expected average delivered wood cost of the planned harvest. The average delivered wood cost of the Planned harvest will increase from around \$27.00/m^3 to around \$28.00/m^3 over the next 15 years. In 20 years, the delivered wood cost will drop to the 20 year average of \$27.50/m^3.

These production targets establish a level of use that is within the capabilities of the Crown timber resource at current levels of management. The annual allowable cut (AAC) addresses the dependance of local communities on the forest sector economy by rationing supply over the long term.

4.1.1 Allowable Annual Cut (AAC)

The AAC for the Robson Valley TSA is 700,000 m^3 per year effective from the TSA Plan approval date until December 31, 1992 or until prior revision.

The AAC is comprised of two categories as follows:

1)	Replaceable Tenure	-	500 000 m^3 per year
2)	Non-replaceable Tenure	-	200,000 m^3 per year
			700 000 m^3 per year

The planned annual cut to be taken from the Non-replaceable Tenure category (usually less accessible, or low quality and low volume stands, sometimes referred to as opportunity wood) allows the Regional Manager to sell short term timber sales, to initiate sales for the salvage of timber damaged or killed by bark beetles, wildfire and other natural catastrophies and to initiate sales for access development purposes.

A 10 year non-replaceable forest licence was awarded to Canadian International Timber Corporation in this category for a total annual harvest of 60,000 m^3 per year, in low quality cedar-hemlock stands. In addition a 140,000 m^3 20 year non-replaceable forest licence will be advertised to encourage access development in the Goat, Morkill and Raush drainages.

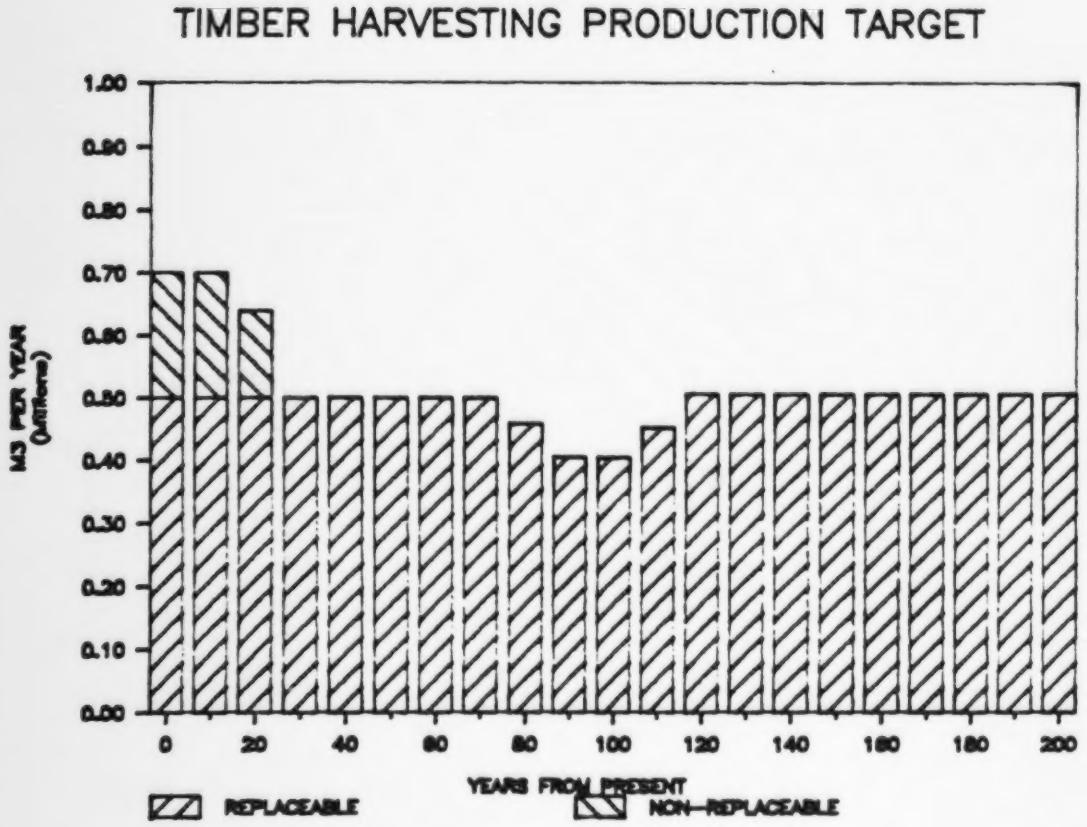

Figure 3. Timber Harvesting Production Target

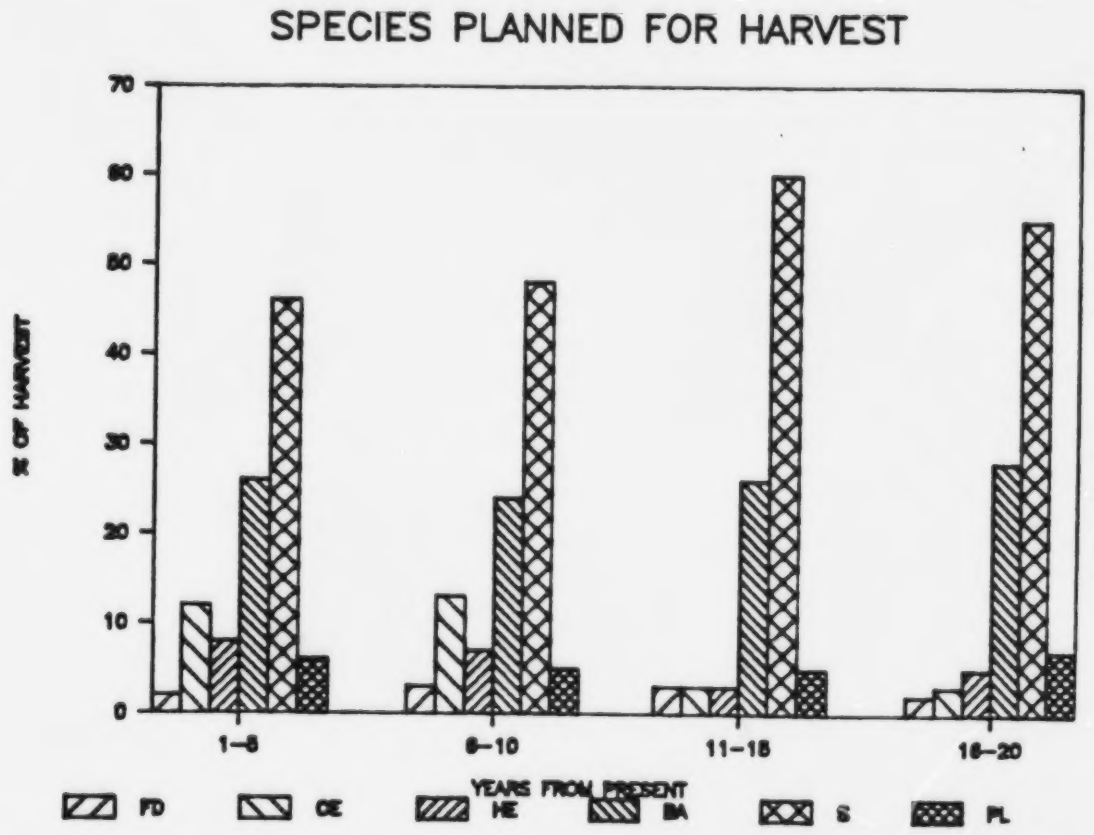

Figure 4. Species Planned for Harvest

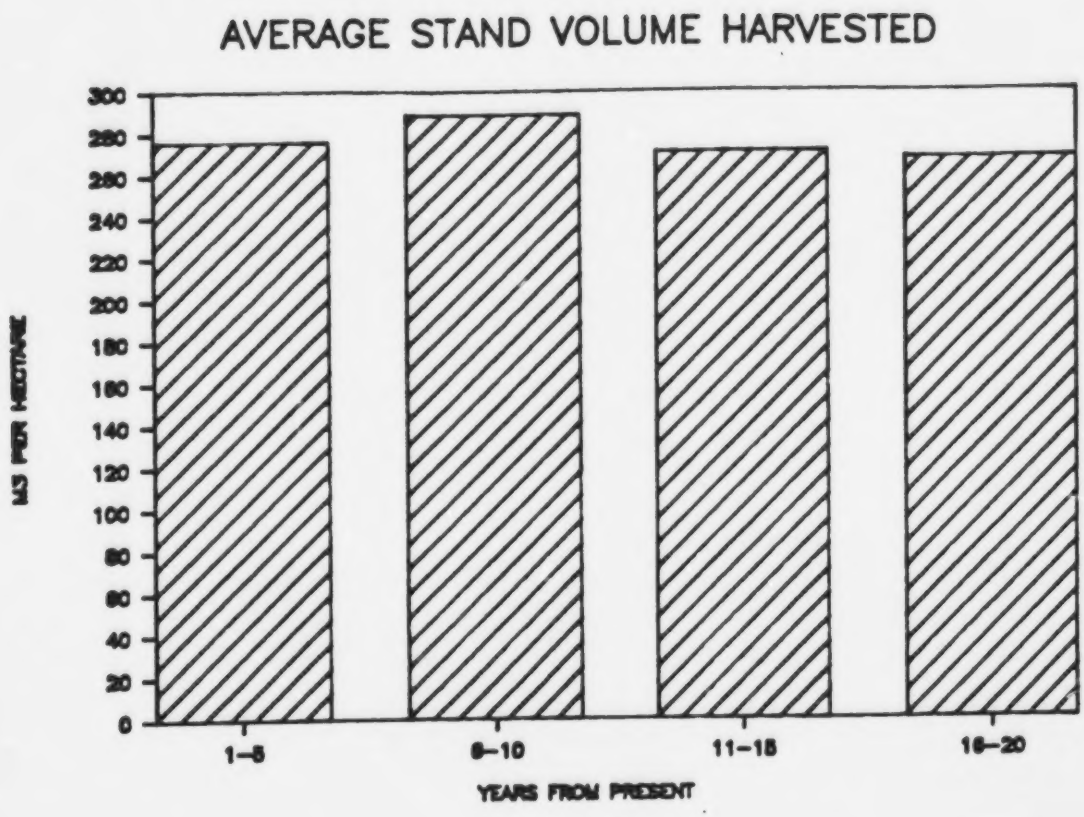

Figure 5. Average Stand Volume Planned for Harvest

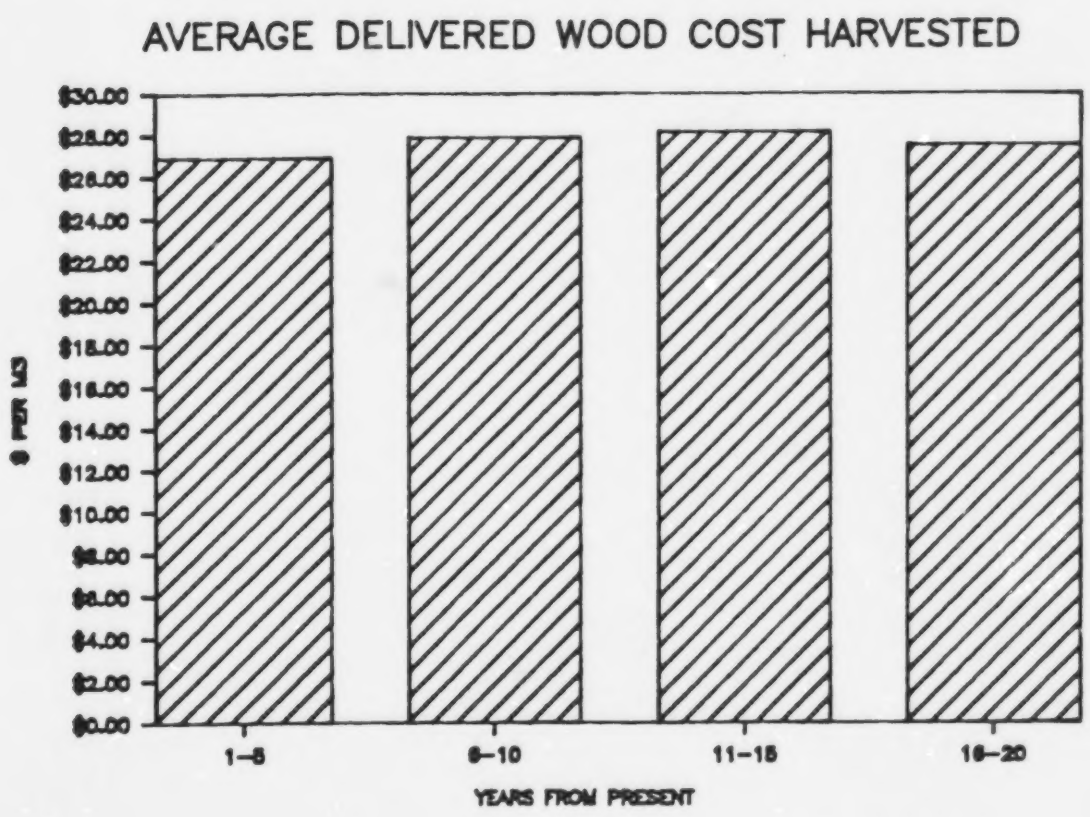

Figure 6. Average Delivered Wood Cost of Timber Planned for Harvest

4.2 Forage

The forage production target is shown in Figure 7. The authorized forage use for domestic livestock is currently around 4,100 AUMs. With the development of the McKale Community Pasture, the target is to increase the demand for forage to 5,000 AUMs per year. This target is expected to remain fairly stable over the term of this Plan.

This forage production target should meet current needs of the ranching industry. It also establishes a level of use that is within the capabilities of the crown range resource at current levels of management.

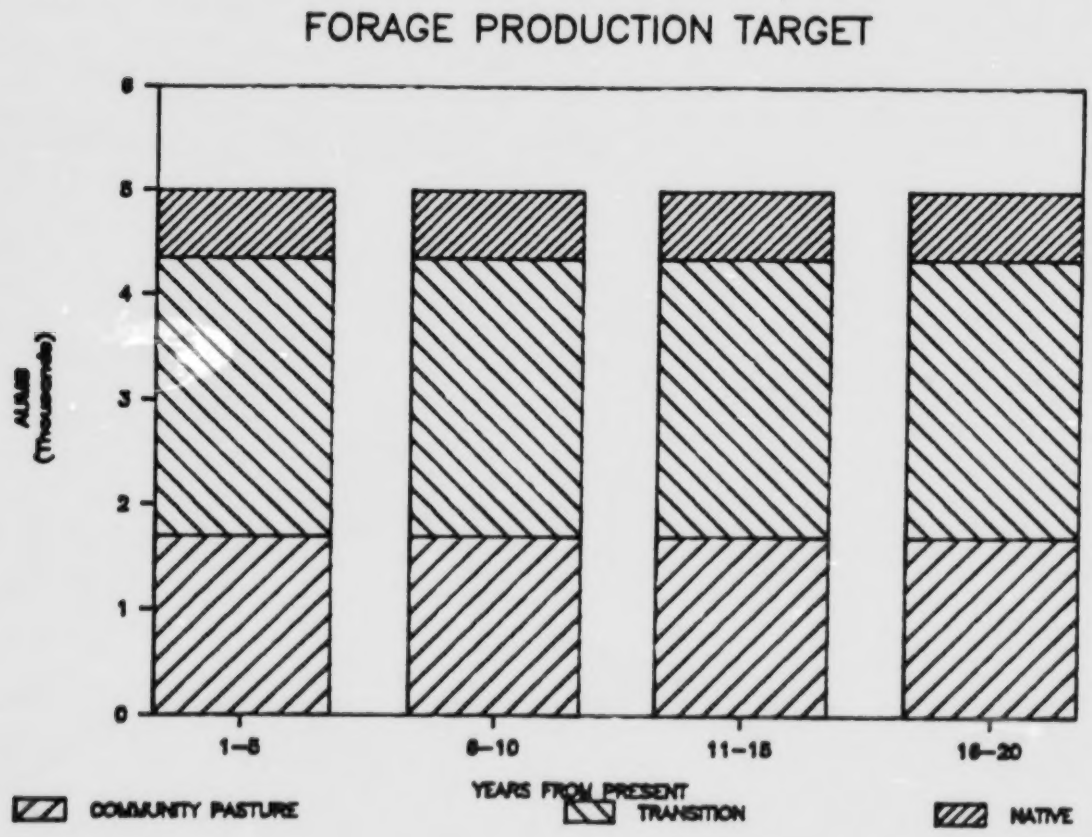

Figure 7. Forage Production Target for Domestic Livestock

4.3 Recreation

The recreation production targets are shown in Figure 8. The amount of recreation opportunities in the TSA are affected by the location of harvesting, particularily if the harvest occurs in Semi-Primitive and Primitive areas. Presently, there are 1,014,000 hectares of Semi-Primitive and Primitive areas in the TSA. Based on the forecasted location of the 20 year operating areas and their implied access requirements, the amount of Semi-Primitive/Primitive areas will decrease to 870,000 hectares by 2008. Conversly, the amount of Roaded Resource Land Recreation opportunities is 220,000 hectares increasing to 364,000 hectares in 2008. These targets are subject to revision following the digitization of the ROS inventory onto the Forest Inventory Planning database. Presently, there is no data available on demand estimates, however carrying capacities of the recreation opportunity in the TSA are indicated in Section 5.3.

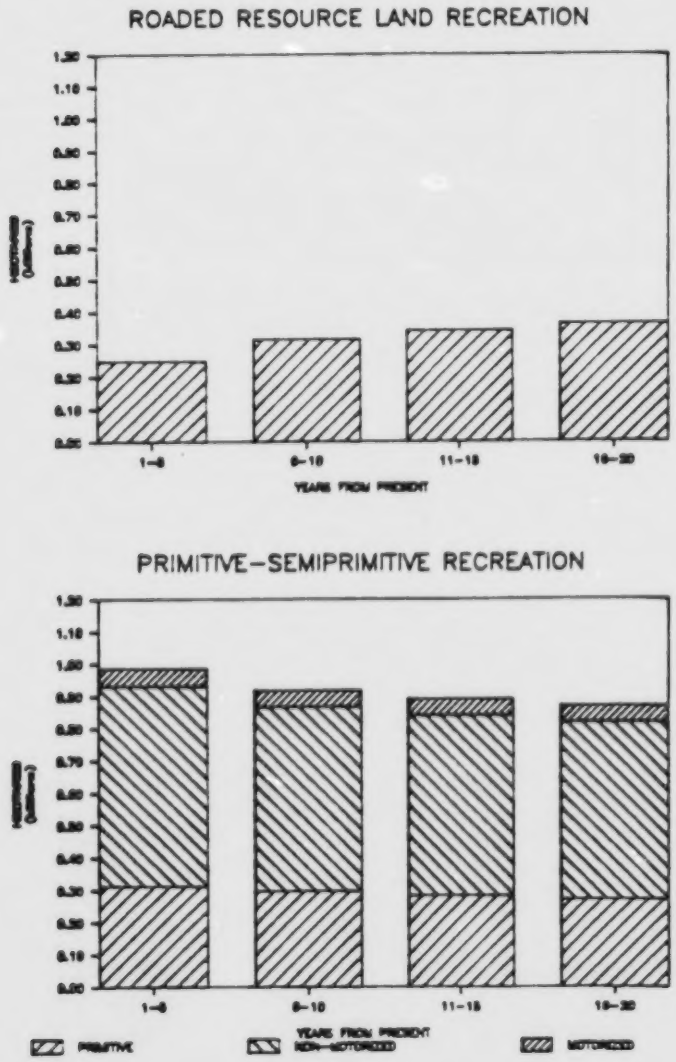

Figure 8. Recreation Opportunity Production Targets.

5.0 MANAGEMENT STRATEGIES

Strategies for managing the timber resource include locating supplies of Crown timber, developing access to these supplies and providing silviculture, fire management and pest management programs. For managing the range resource, strategies include building structures for livestock and enhancing forage. Strategies for managing recreation include protecting landscapes, providing recreational facilities and providing for wilderness experiences. These strategies have been selected to achieve the production targets set out in Section 4.0.

5.1 Timber Resources

5.1.1 Timber Administration

The harvesting of timber will be planned and managed through the periodic review and updating of Management and Working Plans, Development Plans, and Cutting Permits (prepared by Licensees), and through Local Resource Use Plans and Five Year Plans for the Small Business Forest Enterprise Program (SBFEP) (prepared by the Forest Service). All plans will be adjudicated and approved on the basis of their conformity to the following timber management strategies:

A) Utilization Standards

All species will be utilized to close utilization standards less decay waste and breakage. Table 3 describes these standards.

Table 3. Minimum Utilization Standards

	Minimum Utilization Standards (cm)		
Species	Diameter Breast Height	Stump Height	Top Diameter
Spruce, Balsam Douglas-Fir, White Pine, Cedar Hemlock	17.5	30	10
Lodgepole Pine	12.5	30	10
Deciduous Species	17.5	30	10

B) Priority Cutting Ages

All timber harvested will be older than the following cutting ages unless insects or disease are present, growth has stagnated, or the timber has been damaged by fires. In those cases, the level of damage or stand conditions will dictate the cutting age.

Table 4. Priority Cutting Age (Years) by Species

	Priority Cutting Age (Years) by Species			
Supply Block	Douglas-Fir Cedar, Spruce	Lodgepole Pine	Balsam Hemlock	Deciduous Species
All	141+	101+	121+	61+

C) Robson Valley TSA 20-Year Operating Areas

Harvesting development by individual licensees and the Small Business Forest Enterprise Program (SBFEP) over the term of this Plan will be carried out according to the harvesting locations designated in the first 5-year period of the 20-Year Planning Horizon. In not all cases will licencee Five Year Development Plans coincidently match the operating area volumes stated in this Plan exactly. Five Year Development Plans are renewed annually showing the next five years harvest. Additionally, previously approved Development Plans do not always show the same harvest schedule in comparison to the scheduling of the harvest in the first five year period of this Plan. However over the 20 year planning horizon, harvesting operations should closely match the location of the 20 year operating areas.

The operating areas for forest licences include volumes of timber which were not harvested in the previous cut control period (1982-1986) and are summarized as follows:

Zeidler	98,120 m^3
Slocan	92,115 m^3
TOTAL	190,235 m^3

This volume[1] will be harvested by the respective licencees in their designated operating areas, during the first 5-year period of the 20-Year planning horizon.

1) This volume equals 10% of the forest licencee's AAC as at December 31, 1987 and is the volume allowed to be carried forward from the previous cut control period.

The SBFEP operating areas include the 5% annual volumes recovered from the Licencees through the passage of recent legislation (Bill 28) and also include 20,690 m^3 of unutilized AAC (Forest Service Reserve), and 113,115 m^3 of forest licence and SBFEP unharvested volume from the 1982-1986 cut control period. The undercut will be harvested in the designated operating areas during the first 5-year period of the 20-Year planning horizon.

The operating areas do not include the location or the volume of timber in Woodlot Licences. The operating areas also do not include the location of Timber Sale Licences held by CITC and Harstad Sawmills Ltd. for a total AAC of 1,262 m^3. As in the case with the Woodlots, these volumes are too small to be feasibly assigned to operating areas. The location of this harvest will be subject to prior agreement with the licensees and/or is subject to the direction of the Regional Manager or District Manager.

The operating areas do not include the location of the volume to be harvested under C.I.T.Cs' cedar-hemlock 10-year non-replaceable forest licence. Much of this timber will be harvested in Zeidler's, Slocan's or the SBFEP planning cells. When CITC submits a MWP showing where their proposed harvest will be, and their MWP is approved, this Plan will be ammended to show their operating areas.

Also, the operating areas do not include the location or the volume of timber to be sold under the new access development 20 year non-replaceable Forest Licence. When this licence is awarded, a 20 year operating area will be defined and this Plan will be amended. Without being specific to individual Planning cells, this licence will be located in the Goat, Raush and Morkill River drainages.

The 20-Year Operating Areas documented in detail in Appendix 9.1, are summarized in the following tables and maps:

1. Projected 20-Year Volumes Planned for Harvest by Licensees and the SBFEP. (Table 5)

2. Projected 20-Year Areas Planned for Harvest by Forest Type. (Table 6)

3. A map, at a scale of 1:250,000, showing the Projected Location of 20-Year Operating Areas by Licensee; may be reviewed by appointment at Prince George Region and McBride District offices.

The tables and maps depict 20-year operating areas which account for an annual harvest of 493,738 m^3 or 99% of the replacable AAC and 70% of the total AAC (includes non-replaceable licences). Over the 5-year term of this Plan, approximately 2,771,100 m^3 of coniferous timber will be harvested, denuding approximately 10,300 hectares for an average volume per hectare of 270 m^3.

Table 5. Projected 20-year Volumes Planned for Harvest by Licensees and the SBFEP

Licence or SBFEP	Operating Area	Scheduled Volume (000's m^3) 1988-1992	1993-2007	Total	DWC $/m^3$	AAC m^3/yr	Percent of 20 year AAC Scheduled
Bell Pole Co Ltd.	Castle Creek	52,700	29,400	82,100	24.65		
	Dawson Creek	0	128,500	128,500	26.61		
	Subtotal	52,700	157,900	210,600	25.84	10,012	105.2
	DWC($/$m^3$)	25.06	26.11				
Hauer Bros. Lumber Ltd.	Tete Jaune S.	17,200	79,200	96,400	24.16		
	Tete Jaune N.	42,700	100,100	142,800	44.28		
	Subtotal	59,900	179,300	239,200	36.17	11,372	105.2
	DWC ($m/^{3})	42.50	34.07				
Slocan Forest Products Ltd.	Kiwa	0	72,700	72,700	25.88		
	Swift Creek	0	8,700	8,700	19.82		
	Canoe River	0	207,600	207,600	23.91		
	Camp Creek	63,200	265,800	329,00	24.48		
	West Canoe	322,800	468,100	790,900	26.75		
	East Canoe	0	63,300	63,300	22.14		
	Ptarmigan	222,900	140,800	363,700	29.29		
	Hugh-Allan	0	713,000	713,000	30.46		
	Bulldog	104,700	306,100	410,800	22.38		
	Laselle-Hellroaring	258,000	378,400	636,400	25.52		
	Subtotal	971,600	2,624,500	3,596,100	26.54	175,018	102.7
	DWC ($m/^{3})	25.76	26.83				
Zeidler Forest Industries Ltd.	McKale	0	39,500	39,500	31.06		
	Dore River	81,000	115,100	196,100	24.72		
	West Twin	208,400	6,900	215,300	24.69		
	Goat/Milk	524,800	199,200	724,000	27.97		
	Morkill	220,600	190,300	410,900	26.90		
	Cushing Creek	0	511,600	511,600	29.02		
	Forgetmenot	0	1,220,800	1,220,800	28.72		
	Betty-Wendle	0	513,600	513,600	32.25		
	Subtotal	1,034,800	2,797,000	3,831,800	28.49	186,428	102.7
	DWC ($/$m^3$)	27.04	29.02				

Table 5 (cont'd)

Licence or SBFEP	Operating Area	Scheduled Volume (000's m^3) 1988-1992	1993-2007	Total	DWC $/m^3	AAC $m^3/yr	Percent of 20 year Scheduled
SBFEP	Westridge	73,700	193,000	266,700	21.77		
	Dore River/ Lucille	140,200	0	140,200	27.01		
	Mckale/ Laselle	75,000	692,800	767,800	25.72		
	Snowshoe/ Ptarmigan	140,300	187,000	327,300	22.30		
	Kinbasket Lk	0	50,900	50,900	19.81		
	Swift Creek	0	32,700	32,700	22.06		
	Morkill	102,100	75,400	177,500	30.66		
	Trench-West	56,800	94,200	151,000	23.15		
	Trench-East	64,000	0	64,000	46.93		
	Cariboo	0	319,700	319,700	33.00		
	Subtotal	652,100	1,645,700	2,297,800	26.49	110,908	103.6
	DWC ($/$m^3$)	27.32	26.16				
All Licencees		2,771,100	7,404,400	10,175,500	27.47	493,738	103.0
		26.95	27.67				

Table 6. Projected 20 Year Areas Planned for Harvest by Forest Type

LICENSEE	EXISTING FOREST TYPE	AREA (HA) HARVESTED 1988-1992	1993-1997	1998-2002	2003-2007	20 YEAR TOTAL
Bell Pole Co. Ltd.	F,FS,FPL,FDec (G/M/P)	13	2	4	7	26
	FC,FH (G/M/P)	1	21	14	0	36
	Cedar (G/M/P)	15	6	26	39	86
	Hemlock (G/M/P)	18	7	15	20	60
	BS (G/M)	1	0	0	0	1
	BS (Poor)	24	3	2	3	32
	S,SF,SB,SPL,SDec (G/M)	67	72	41	55	235
	S,SF,SB,SPL,SDec (Poor)	0	3	2	0	5
	SC,SH (G/M)	8	3	1	7	19
	PL,PLF,PLS (G/M)	1	0	0	1	2
	PL,PLF,PLS (Poor)	1	0	0	0	1
	TOTAL	149	117	105	132	503
Hauer Bros Lumber Ltd.	F,FS,FPL,FDec (G/M/P)	0	19	48	7	74
	FC,FH, (G/M/P)	0	5	14	0	19
	Cedar (G/M/P)	3	2	2	24	31
	Hemlock (G/M/P)	1	0	0	6	7
	B,BH (G/M/P)	1	11	12	30	54
	BS (G/M)	4	5	6	14	29
	BS (Poor)	55	31	53	58	197
	S,SF,SB,SPL,SDec (G/M)	77	127	75	24	303
	S,SF,SB,SPL,SDec (Poor)	28	12	11	12	63
	SC,SH, (G/M)	0	1	1	3	5
	PL,PLF,PLS (G/M)	71	11	38	73	193
	PL,PLF,PLS (Poor)	18	1	3	12	34
	TOTAL	258	225	263	263	1009

Table 6 (cont'd)

LICENSEE	EXISTING FOREST TYPE	AREA (HA) HARVESTED 1988-1992	1993-1997	1998-2002	2003-2007	20 YEAR TOTAL
Slocan Forest Products Ltd.	F,FS,FPL,FDec (G/M/P)	78	95	41	57	271
	FC,FH (G/M/P)	20	3	23	2	48
	Cedar (G/M/P)	468	255	42	116	881
	Hemlock (G/M/P)	119	155	16	50	340
	B,BH (G/M/P)	32	57	98	136	323
	BS (G/M)	71	215	104	72	462
	BS (Poor)	84	80	109	182	455
	S,SF,SB,SPL,SDec (G/M)	1207	1120	1806	1426	5559
	S,SF,SB,SPL SDec (Poor)	229	125	184	124	662
	SC,SH (G/M)	280	189	37	56	562
	SC,SH (Poor)	3	1	1	22	27
	PL,PLF,PLS,(G/M)	572	542	391	461	1966
	PL,PLF,PLS (Poor)	6	6	4	9	25
	TOTAL	3,169	2,843	2,856	2,713	11,581
Zeidler Forest Industries	F,FS,FPL,FDec (G/M/P)	0	0	0	1	1
	Cedar (G/M/P)	174	113	4	73	368
	Hemlock (G/M/P)	138	48	14	7	207
	B,BH (G/M/P)	138	118	20	5	281
	BS (G/M)	912	242	54	72	1280
	BS (Poor)	1021	605	434	402	2462
	S,SF,SB,SPL,SDec (G/M)	1338	1771	2048	1628	6785
	S,SF,SB,SPL,SDec (Poor)	133	367	1122	1346	2968
	SC,SH (G/M)	172	176	20	84	452
	SC,SH (Poor)	0	0	0	2	2
	PL,PLF,PLS (G/M)	2	0	0	29	31
	TOTAL	4,032	3,440	3,717	3,649	14,837

Table 6 (cont'd)

LICENSEE	EXISTING FOREST TYPE	AREA (HA) HARVESTED 1988-1992	1993-1997	1998-2002	2003-2007	20 YEAR TOTAL
Small Business Forest Enterprise Program	F,FS,FPL,FDec (G/M/P)	6	5	4	6	21
	FC,FH (G/M/P)	0	0	0	1	1
	Cedar (G/M/P)	768	638	531	701	2638
	Hemlock (G/M/P)	40	103	17	70	230
	B,BH (G/M/P)	155	75	72	63	365
	BS (G/M)	125	161	23	30	339
	BS (Poor)	426	192	294	376	1288
	S,SF,SB,SPL,SDec (G/M)	830	486	779	561	2656
	S,SF,SB,SPL SDec (Poor)	178	178	123	140	619
	SC,SH (G/M)	140	247	251	119	757
	SC,SH (Poor)	40	19	14	18	91
	PL,PLF,PLS,(G/M)	26	88	31	141	286
	PL,PLF,PLS (Poor)	4	13	1	0	18
	TOTAL	2,738	2,205	2,140	2,226	9,309
All Licencees	F,FS,FPL,FDec (G/M/P)	97	121	97	78	393
	FC,FH (G/M/P)	21	29	51	3	104
	Cedar (G/M/P)	1,432	1,014	605	953	4,004
	Hemlock (G/M/P)	316	313	62	153	844
	B,BH (G/M/P)	326	261	202	234	1,023
	BS (G/M)	1,113	623	187	188	2,111
	BS (Poor)	1,610	911	892	1,021	4,434
	S,SF,SB,SPL,SDec (G/M)	3,519	3,576	4,749	3,694	15,538
	S,SF,SB,SPL SDec (Poor)	568	685	1,442	1,622	4,317
	SC,SH (G/M)	600	616	310	269	1,795
	SC,SH (Poor)	43	20	15	40	118
	PL,PLF,PLS,(G/M)	672	641	460	705	2,478
	PL,PLF,PLS (Poor)	29	20	8	21	78
	TOTAL	10,346	8,830	9,080	8,981	37,237

5.1.2 Access Development

The access requirements for the TSA management strategies will be coordinated with the licensees to ensure that new access is scheduled to meet the harvesting requirements of the licencees and the Small Business Forest Enterprise Program. These strategies include:

A) Access Priority:

The following Forest Service Roads (FSRs) will be used to access the mature and over mature volumes that comprise much of the Robson Valley TSA:

1) Morkill Forest Service Road:

Development in the Morkill River Drainage started in January 1988 with the construction of two permanent bridges across the CN Railway and the Fraser River at Crescent Spur. Construction was done by Ziedler Forest Industries and was funded by the Ministry of Forests under Section 88. In addition, the Forest Service is committed to spending approximately $85,000 for the segment of the road which serves agricultural lands on the east side of the Fraser River. The balance of the development costs to the northern boundary of Planning Cell #I022 will be shared by Zeidler Forest Industries and Slocan Forest Products. Slocan Forest Products has agreed to build the first 9.3 km of the road past the Fraser River bridge. Ziedler Forest Industries will build the remainder of the road to their operating area above Planning Cell #I022. In consideration of this project, both licensees have agreed to an arrangement to trade volumes within each other's operating area.

2) Canoe River Forest Service Road:

Slocan Forest Products has proposed the construction of nine kilometers of road to Ptarmigan Creek in 1988. The road access from Ptarmigan Creek to Hugh Allen Creek which is at the end of the Canoe River Forest Service Road will be in place by 1993. Once to Hugh Allan Creek the licensee can access timber in the Blackman drainage.

3) The following Forest Service roads have been completed and will be maintained for timber and public use:
   Canoe West Forest Service Road.
   Holmes Forest Service Road.
   Westridge Forest Service Road.
   Tete Jaune - Croydon Forest Service Road.

4) Construction on the following Forest Service roads are nearing completion and the licensees will build the remainder of the Forest Service roads under appraisal with the approval from the Ministry of Forests:
   Dore River Forest Service Road.
   Goat River Forest Service Road.
   Goat Milk Forest Service Road.

With respect to the Goat-Milk Forest Service Road through the pass into the Betty Wendle drainage, the Forest Service will share development costs with Zeidler Forest Industries, for that part of the road which will also serve the SBFEP in the Cariboo drainage. At the time of construction (currently scheduled for 1993-1997), the SBFEP Account could fund approximately 38% of the development costs for the shared segment of road. Zeidler Forest Industries could fund approximately 62% of the development costs.

5) Construction of the following roads are planned for the SBFEP by the Ministry of Forests:
   Dore South Forest Service Road.
   Mountain View Forest Service Road.
   Catfish Forest Service Road.
   Approximately 30 kms of Forest Service Roads are scheduled for construction over the next 5 - 10 years. Other operating areas in the Robson Valley TSA are designated for the SBFEP. The amount of Forest Service Roads constructed will increase over the years.

B) Access Development Forest Licence

The successfull bidder for the 20 year non-replaceable Forest Licence must develop access into three major drainages as identified on TSA map #2. In addition the licencee must develop access to specific locations in these areas in accordance with the following Schedule:

Table 7 Required Road Development Schedule

DEVELOPMENT AREA	ACCESS ROAD	ROAD LENGTH (Km)	LOCATION	YEAR
Goat River	Lower Goat	5.2	To	
	Upper Goat	18.5	11.5 Kms	By
	North Star	7.7	along Upper	1993
	McLeod	7.5	Goat Road	
	TOTAL	38.9		
Morkill	Upper Morkill	27.7	To 27.7 Kms (Renshaw Creek)	By 1998
Raush	Raush	67.2		
	Raush A	8.5	To 31.2 Kms	
	Raush B	9.3	along the Raush	By
	Raush C	5.1	Road (Black	2003
	Black Martin	8.0	Martin Creek)	
	TOTAL	98.1		

There is presently a fair weather road into the lower portion of the Raush Valley, with a private crossing at the CN Rail tracks and a gate which restricts access. The ministry, pending funding, is proposing to construct a public crossing over the CN Rail and construct the first portion of the road. All other roads will be built by the licencee to optimum road standards and the ministry will approve the plans, cost estimates and road specifications. Depending on the classification of these roads, the licencee will bear full development costs, and the costs will be used in the determination of stumpage rates.

C) Survey and Property Acquistion:

Survey and Property Acquisition required for forest service rights of way requests will be made through the Real Estate Services Branch as access is required through private lands. Since there is a large portion of private land in the valley from the Morkill River in the north west to Valemount at the north end of Kinbasket Lake, advanced planning is required to clear all rights of way for road construction.

D) Projected Road and Bridge Development:

The Forest Service Road and bridge development will be designed, constructed and maintained to Forest Service standards. The roads and bridges built to date and those proposed over the next twenty years are listed in Table 8.

TABLE: 8. Projected 20 - year Road and Bridge Development.

Forest Service Road (F.S.R.)	Built (Km)	Proposed (Km)	Existing Structures	Proposed	Replacement
Swift Mountain	6.0	-	-	-	-
Canoe River	31.3	32.7	5	3	2
Canoe West	48.3	-	11	-	6
McBride Lookout	9.8	-	-	-	-
Holmes	36.2	-	2	-	3
Raush Valley	-	62.0	-	6	-
Tete-Jaune-Croydon	18.0	-	2	-	2
Goat River	13.0	24.0	3	6	-
Goat Milk	13.0	20.9	3	-	2
Morkill	1.0	31.5	2	5	-
Westridge	18.624	5.0	1	-	1
Dore River	6.725	-	2	-	-
Dore South	10.0	12.1	3	2	-
McLennen	6.87	-	2	-	1
Mountain View	18.1	20.0	2	2	2
Catfish	-	7.2	-	1	-
TOTAL:	236.919	215.4	38	25	19

TOTAL ROADS: 452.319 TOTAL STRUCTURES: 63

5.1.3 Forest Renewal

Reforestation will be conducted on all areas denuded by wildfire, or harvesting, at levels consistent with the current basic silviculture program funding in accordance with the following management strategies:

A) Post October 1, 1987

Immediate Reforestation will be conducted on all areas denuded by harvesting or minor wildfire and pests subsequent to October 1, 1987. Reforestation treatments will be carried out in line with Pre-Harvest Silvicultural prescriptions and to standards defined within the Forest Act and Regulations. Major Licensees will incur the responsibility to both fund reforestation treatments and attain free-growing plantation status on all harvested areas within their 20 year operating areas. The Ministry of Forests incurs the responsibility to both fund and attain free-growing plantation status on all areas harvested under the SBFEP. The Ministry of Forests will be totally responsible for funding and reforesting areas damaged by catastrophic fire and pest outbreaks; and will provide for ongoing restocking of minor areas destroyed by fire and pests, consistent with available funding.

B) Pre October 1, 1987

Reforestation on areas harvested or denuded by minor wildfire and pests between January 1, 1982 and October 1, 1987 will be conducted over a 5 year period ending 1992. Licensees are responsible to conduct reforestation treatments on areas harvested under a major Licence while the Ministry of Forests is responsible for areas harvested under the Small Business and Minor Tenures program or denuded by minor wildfires. All funding of these treatments will be borne by the Ministry of Forests over the 5 year period.

C) Table 9 shows the reforestation methods required to reforest denuded areas consistent with current silviculture programs. To achieve basic silviculture across the TSA, approximately 84% of the denuded[1] areas will require site preparation for natural or artificial regeneration (about 2,500 hectares per year). Approximately 95% of the denuded areas will require planting (about 2,900 hectares per year) and approximately 68% of the denuded area will require brushing (about 2,000 hectares per year). It is estimated that approximately 3,190,000 seedlings will be planted per year at an average establishment density of 1100 seedlings per hectare.

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1) Harvesting, Wildfire denudation. Approximately 3,000 hectares annually consisting of 2,600 hectares annually of harvesting denudation, (Determined from licencee harvest schedules) and 400 hectares of timber denuded by fire (See Section 4.1.4.).

Table 9. Required Regeneration Methods for the Robson Valley TSA to Achieve Basic Silviculture

			Percentage of Area Treated									
			Natural Regeneration						Artificial Regeneration			
Existing Forest Type	Regen. Forest Type	Allow. Regen. Delay	No Treatment	No Treatment & Brush/ Weed	Site Prep.	Site Prep & Brush/ Weed	Pre-Harvest Hack & Squirt Site Prep	Site Prep & Plant & Brush/ Weed	Site Prep & Plant	Raw Plant & Brush/ Weed	Raw Planting	Pre-Harvest Hack & Squirt Site Prep & Plant
F,FS,FPL	F,FS, FPL	3	70%									
G,M,P, SITES	F,FS, FPL	2						30%				
FC,FH	F,FS, FPL	1									80%	
G,M,P, SITES	F,FS, FPL								20%			
C,CF,CH, CS G,M,P, SITES	S,SF, SB,SPL	2						100%				
H,HF,HC, HB G,M,P, SITES	S,SF, SB,SPL	2						100%				
B,BH G,M,P, SITES	S,SF, SB,SPL	2						100%				
BS	S,SF, SB,SPL	2						60%				
G,M, SITES	S,SF, SB,SPL	5										40%

Table 9. Required Regeneration Methods for the Robson Valley TSA to Achieve Basic Silviculture (cont'd)

Existing Forest Type	Regen. Forest Type	Allow. Regen. Delay	Percentage of Area Treated									
			Natural Regeneration					Artificial Regeneration				
			No Treatment	No Treatment & Brush/ Weed	Site Prep.	Site Prep & Brush/ Weed	Pre-Harvest Hack & Squirt Site Prep	Site Prep & Plant & Brush/ Weed	Site Prep & Plant	Raw Plant & Brush/ Weed	Raw Planting	Pre-Harvest Hack & Squirt Site Prep & Plant
BS POOR SITES	S,SF, SB,SPL	3							100%			
S,SF,SB, SPL G,M, SITES	S,SF, SB,SPL	2						100%				
S,SF,SB, SPL POOR SITES	S,SF, SB,SPL S,SF, SB,SPL	4 3							50%		50%	
SC,SH G,M, SITES	S,SF, SB,SPL	2						100%				
SC,SH POOR SITES	S,SF, SB,SPL	3						100%				

Continued

Table 9. Required Regeneration Methods for the Robson Valley TSA to Achieve Basic Silviculture (cont'd)

			Percentage of Area Treated									
			Natural Regeneration					Artificial Regeneration				
Existing Forest Type	Regen. Forest Type	Allow. Regen. Delay	No Treatment	No Treatment & Brush/ Weed	Site Prep.	Site Prep & Brush/ Weed	Pre-Harvest Hack & Squirt Site Prep	Site Prep & Plant & Brush/ Weed	Site Prep & Plant	Raw Plant & Brush/ Weed	Raw Planting	Pre-Harvest Hack & Squirt Site Prep & Plant
PL,PLF, PLS G,M,SITES	PL,PLF, PLS	3		30%								
	PL,PLF, PLS	4				50%						
	PL,PLF, PLS	1								20%		
PL,PLF, PLS POOR SITES	PL,PLF, PLS	4	70%									
	PL,PLF, PLS	5			30%							

5.1.4 Forest Protection

Forest and Range resources will be protected by the current protection and fire suppression programs. Losses to wildfires and pests will be minimized through the following protection activities:

A) FIRE SUPPRESSION

Unsalvaged loss to fire (as shown in Table 10) could potentially be as high as 68 fires per year, 406 hectares per year, with an average volume loss of 85,000 m^3 per year, over the term of this Plan.

Table 10. Projected Annual Fire Unsalvaged Losses[1]

Fires	Unsalvaged Area (ha) Imm.	Mat.	Total	Unsalvaged Volume (m^3) Imm.	Mat.	Total
68	20	386	406	2,000	83,000	85,000

A fire prevention program will continue in the district to reduce losses to man caused and lightning fires by the following activities:

1) Detection systems such as aerial patrols, ground patrols, secondary lookouts and the lightning location systems will be maintained and improved to help meet the objectives of control by 10:00 AM. of the following burning period.

2) A fire weather network is in place and will be upgraded over the next five years to cover each fire management zone within the district. The indices from this fire weather network will be used to dictate necessary closures and aid in prescribed burning.

3) Fire preparedness plans are in place within the six fire management zones in the TSA and are based on four preparedness levels. This plan is updated annually and covers protection agreements with Mount Robson Provincial Park, the villages of McBride and Valemount, and the rural areas of Dunster and Tete Jaune.

4) A communication network of repeaters, plus one jointly shared with the Mt. Robson Provincial Park will be maintained and upgraded as required.

5) A training program is in place within the district to annually update proficiency levels of those who may be involved in fire suppression activities. This training will also include Fire Wardens and Fire Prevention Officers from the various communities and industry.

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1) Based on the 1976-1985 Fire loss average doubled to account for the large areas of Fire-originated NSR on history-record system.

6) All industrial burning will be inspected prior to burning permit issuance and all industrial forestry operations will be inspected for compliance with the Fire Prevention Regulations.

B) FUEL MANAGEMENT

To ensure that the productive capability of the forest and range resources is maintained, prescribed burning and hazard abatement will be carried out according to the Prince George Forest Region Protection Standard Operating Procedures. These procedures detail requirements to minimize fire hazards, reduce hangover fires, and destroy habitat for bark beetle brood development.

Prescribed burning will be the primary method of fuel management and site preparation. Due to the steepness of the terrain and site preparation costs, broadcast burning will be conducted on the majority of the prescribed areas. All areas on which broadcast burning is contemplated will be inspected and monitored by Protection Staff to ensure block design and burning plans are reasonable to conduct a safe burn.

In smoke sensitive areas, all permit burning will be controlled to reduce excessive smoke accumulation, and the District Manager will ensure that emissions do not exceed an acceptable level.

C) PEST MANAGEMENT

Bark beetles, lodgepole pine dwarf mistletoe and the threat of increasing numbers of plantation pests are important considerations in the Robson Valley T.S.A. Unsalvaged losses to insect pests, namely bark beetles are shown in Table 11. In addition, Table 11 shows the unsalvaged losses to windthrow.

TABLE 11 Projected Annual Pest and Windthrow Unsalvaged Losses.

AGENT	LOSSES (m^3 per year)
Spruce Beetle	20,000
Mountain Pine Beetle	20,000
Western Balsam Bark Beetle	3,500
PEST SUBTOTAL	43,500
Reserve Windthrow	2,500
Fringe Windthrow	7,000
Patch Windthrow	2,000
WINDTHROW SUBTOTAL	11,500
TOTAL	55,000

Pest losses will be limited through the following bark beetle management strategies:

1) All known infestations of the mountain pine beetle and the spruce beetle will be monitored in conjunction with the Forest Insect and Disease Survey, (F.I.D.S.) and all incipient infestations will be detected, through aerial and ground based procedures, on an annual basis as defined in the Prince George Forest Region Protection Standard Operating Procedures. Population trends will be assessed on the basis of monitoring procedures.

2) All known infestations of the mountain pine beetle will be controlled by scheduling for harvest, priority stands (Age Class 6+) susceptible to the mountain pine beetle, by developing access to remote areas containing susceptible pine stands, and by disposing of active broods through the following single or combined control treatments:

   - sanitation logging;
   - burning infested trees;
   - treating newly infested trees with an axe-frill injected herbicide;
   - and/or
   - preflight pheromone baiting in the vicinity of infested trees.

3) All known infestations of the spruce beetle will be controlled by scheduling for harvest, priority stands (Age Class 8+) susceptible to the spruce beetle, by developing access to remote areas containing susceptible spruce stands, and by disposing of active broods through the following single or combined control treatments:

   - normal post logging treatments in spruce stands;
   - blowdown salvage before flight periods, and/or
   - trap trees (lethal and conventional) as necessary in accordance with Prince George Forest Region Protection Standard Operating Procedures.

4) All known infestations of the Western Balsam Bark Beetle will be monitored through aerial detection surveys. Where possible, sanitation logging will be conducted in freshly infested stands. Studies in the Prince Rupert Region are being conducted to determine biology, impact, and potential for additional control strategies.

5) All pesticide use in pest management activities will require a Pesticide Use Permit, and will require an application made through the Regional Forest Pesticide Review Committee (RFPRC) to the Pesticide Control Branch.

5.1.5 FOREST ENHANCEMENT

Forest enhancement will be carried out through pest management and incremental silviculture programs in immature stands. The objectives of these programs will be to produce uniform dimension sawlogs of higher value coniferous species in the shortest feasible rotation. Forest enhancement programs include:

A) INCREMENTAL SILVICULTURE

Incremental silviculture programs will be carried out only on forest lands where such programs are considered to be cost effective and in line with Provincial and Regional goals. In consideration of these goals, priorities for incremental silviculture has been set as follows:

Priority 1 Backlog Reforestation including site rehabilitation of backlog Non Satisfactorily Restocked (NSR) area, and Non Commercial Brush area (NCBr) on good and medium site only.

Backlog NSR, and NCBr areas have been assessed equal priority for treatment. Priorities for specific areas will be based on accessibility , proximity to conversion plants, size of area, and cost efficiency of treatments.

Current history record information indicates there are approximately 17,700 hectares of backlog NSR and NCBr areas within the TSA.

Current funding under the Canada-British Columbia Forest Resource Development Agreement (F.R.D.A.) allows backlog reforestation goals of 900 hectares to be achieved annually to 1990. With this rate held constant over the term of the plan, all backlog NSR, NCBr could be rehabilitated within 20 years.

In the next five years, McBride district staff will be carrying out extensive survey and reclassification work on all NSR, NCBr types. From this, a more accurate inventory of potentially treatable areas will be established and prioritized.

Priority 2 Brushing of rehabilitated (restocked) backlog sites

Experience within the T.S.A. has shown that approximately 68% of regenerated areas require brushing treatments in order for plantations to attain minimum standards of growth performance. Brushing restocked backlog sites must be conducted annually to protect investments under Priority 1 and ensure acceptable levels of plantation growth and survival. The present program allows for funding of 800 hectares of backlog regenerated areas per year.

Priority 3 Conifer Release

Insufficient information is available on the area of established conifer stands which require release from supressing deciduous overstory. The "best estimate" is around 7,000 hectares will fit into this category. The T.S.A. 5 year silviculture plan has proposed that a program of 250 hectares be instigated in 1990 and maintained consistent with levels of funding. In the next five years, McBride District staff will identify and survey potential candidate stands qualifying for conifer release.

Priority 4 Juvenile Spacing

Insufficient information is available on the area of established conifer stands which require juvenile spacing to maximize growth potential of the plantations. The "best estimate" is around 500 hectares of age Class 1 and 2 presently fit into this category. Another approximate 1000 hectares of age Class 1 are expected to require spacing within 5 years. The T.S.A. 5 year silviculture plan has proposed that a program of 100 hectares be instigated in 1990 and maintained consistent with levels of funding.

In the next five years, McBride district staff will identify and survey potential candidate stands qualifying for juvenile spacing.

B) PEST MANAGEMENT

Current pest management efforts to enhance the productivity of forest resources should be directed to the increasing threat of plantation pests. These include the lodgepole pine dwarf mistletoe to which losses are estimated to be 2,100 m^3 per year. Stem and gall rusts are evident throughout most naturally-occurring lodgepole pine stands and their spread into and effect upon plantations is of some concern.

As these plantations exceed ages of 10 years, a new group of pests are likely to become significant factors in stand development; white pine weevil, lodgepole terminal weevil and Warren's root collar weevil may become pests of these stands.

Plantation establishment has occasionally been hampered by black army cutworm activity. Root diseases, primarily tomentose root rot and armillaria root disease have been projected to cause net annual losses of 28,400 m^3/yr.

Net losses to lodgepole pine dwarf mistletoe can virtually be eliminated in the next rotation through integrated approaches using harvesting and sanitation procedures. Since the losses attributed to lodgepole pine dwarf mistletoe are incorporated in the growth curves (volume over age curves), any treatments to reduce their loss will presumably result in volume yields greater than those expected from natural stands. Similarly, the incorporation of root disease management strategies, once developed, into forest management procedures will influence volume yields of managed forests. The control of pests of plantations and immature stands provides a great opportunity for significant yield gains at rotation age.

Net losses to these pests will be minimized by monitoring plantation pests and establishing where possible, methods of control. This would include continuing a program of mistletoe eradication in all logged areas. A data base on pest activities and control resources will be established.

5.2 FORAGE RESOURCES

5.2.1 Range Administration

A) The production of forage will be planned and managed through the periodic review and update of Management and Working Plans, Development Plans, and Logging Plans. Range Unit Plans will be developed for all the range units in the T.S.A. and these will be updated as required. Every attempt will be made to integrate the forage resource with other Ministry programs and with the concerns of the public and other agencies.

Forage supply will be obtained from 3 sources as identified in Table 12.

a) Community Pasture - An area set aside and managed specifically as range for livestock. One pasture is presently being developed in the T.S.A. (McKale Community Pasture).

b) Transitional Range - This range has resulted from the logging activities in various areas in the T.S.A. Roads, landings and logged areas all have some forage and some seeding has been done. Some rough clearing and seeding has also been done on suitable areas. It should be remembered that this range source is only available for a relatively short period of time. Gradually, the forest will encroach and this forage supply will be severely diminished. Ongoing timber harvesting activities will theoretically create enough new forage to replace what is being lost through forest succession.

c) Native Range - This range source consists of slide chutes and wild meadows. The slide areas are relatively important in the T.S.A. especially when used in conjunction with the transitional supplies.

TABLE 12

Projected 5 Year Supply of Forage (AUMs)

COMMUNITY PASTURE	TRANSITIONAL	NATIVE	TOTAL
1500 (34%)	2400 (53%)	600 (13%)	4500 (100%)

B) Forage use is currently less than the available supply. Utilization of this resource will be authorized through Range Act grazing permits, Lands Act grazing leases and Range Act grazing licences as identified in Table 13. Forage use authorized by these range tenures will address the following:

a) The principles of integrated resource management.

b) Environmental concerns and safeguards.

c) Reforestation requirements.

d) Fire and pest management requirements.

e) Forage allocation between livestock and wildlife.

f) Other factors pertaining to the management of crown range lands.

TABLE 13

Authorized Range Use by Range Tenure[1]

RANGE UNIT	LAND ACT LEASES		RANGE ACT TENURES		TOTAL TENURES	
	NO. OF TENURES	AUMs	NO. OF TENURES	AUMs	NO. OF TENURES	AUMs
Castle Creek	0	0	1	280	1	280
Dore River	0	0	1	211	1	211
Dunster	1	25	7	248	8	273
East-Twin	0	0	1	28	1	28
Holmes River	0	0	3	631	3	631
Horsey Creek	1	15	3	288	4	303
Kiwa Creek	0	0	1	182	1	182
McKale	1	120	4	463	5	583
McNaughton Lk.	0	0	2	452	2	452
Raush	0	0	1	280	1	280
Robson View	0	0	3	42	3	42
Small River	0	0	3	372	3	372
Spittal Creek	0	0	3	75	3	75
Swift Creek	0	0	7	430	7	430
14 Units of 20 have tenures						
TOTAL	3	160	40	3982	43	4142

1) 1987 figures - based on Range Tenure System (RTS) data. Does not include 2 Hay cutting permits (abandoned cultivation).A.U.M. numbers vary throughout the year as a result of authorized non-use permits, fluctuations in stock numbers and other causes.

5.2.2 Range Land Maintenance and Enhancement

To increase the supply of forage from 4,500 AUMs to 5,000 A.U.M.s annually, the following range improvement activities must be carried out in the T.S.A.:

A) Community Pastures - the following activities must be conducted on the McKale Pasture to achieve the required forage production:

a) Completion of clearing and seeding on approximately 650 hectares.

b) Fertilization of forage as required;

c) Weed control;

d) Construction and maintenance of required fencing; and

e) Water developments and maintenance.

B) Transitional - The following activities will be conducted on these sources to achieve the required forage production:

a) Seeding of roads, landings and erosion-prone skidroads;

b) Seeding of selected cutblocks;

c) Construction and maintenance of cattleguards and fencing;

d) Weed control; and

e) Water developments and maintenance.

C) Native - The following activities will be conducted:

a) Seeding where possible;

b) Weed control;

c) Construction and maintenance of required fencing;

d) Construction and maintenance of stock trails; and

e) Water developments and maintenance.

5.3 Recreation Resources

Forest Service recreation programs will be integrated with other Forest Service and other agency programs. The potential for a diversity of recreation opportunities will be protected and maintained through the following management strategies:

Recreation management activities will be carried out according to Forest Service policies and procedures established in the Ministry Recreation manual. Recreation resource values will be protected through integrated resource management principles.

A recreation resource inventory has been completed for the TSA, as shown in Table 14. This projection to the year 2008 identifies important recreation values.

The total recreation facilities on recreation sites and trails, as of the year 1993, are identified in Table 15. These facilities represent a potential annual user day figure of 35,000.

Table 14

Recreation Resource Inventory Projection
to year 2008, Robson Valley T.S.A.

Year	Total Area (Ha)	Areas with Special Rec. Values (Ha)	Areas with Normal Rec. Values (Ha)	Primitive/ Semi-Primitive Area (Ha)	Roaded Resource Land (Ha)	Key Features	Key Rec. Activities	Potential Capacity for Rec. use (#of SUDOS)	
1988[3]	1,234,300	123,000	1,111,300	1,014,000	220,000	Coniferous Forest, Sub-alpine Forest, Small Water Bodies	hiking hunting	Primitive Semi Primitive Roaded Resource TOTAL	31,000 350,000 441,000 822,000
2008[3]	1,234,300	123,000	1,111,300	870,000	364,000	Coniferous Forest, Sub-alpine Forest, Small Water Bodies	hiking hunting	Primitive Semi-Primitive Roaded Resource TOTAL	27,000 304,000 687,000 1,018,000

Comments/Resource Implications

There are visual concerns along the Highway 16 and 5 corridors and along Kinbasket Lake although this is predominatley a harvesting area. Highway corridors must incorporate Forest Landscape principles in cut block designs throughout the plan period. Areas with special recreation values include sensitive visual areas, recreations sites, and trail corridors. The above information is subject to adjustment following the completion of digitizing the Recreation Overlay to the Robson Valley Forest Inventory Planning Database.

TABLE 15
Total Forest Service/Licensee Recreation Facilities
Projected to 1993, Robson Valley TSA

Forest Service/ Licensee Sites				Forest Service/ Licensee Trails			Unmanaged Trails Within F.S. Jurisdiction			
Road Access		Non-Road Access					Recreation		Historic	
No.	Vehicle Units	No.	Vehicle Units	Type	No.	km	No.	km	No.	km
13	92	1	2	Summer	12	90	6	30	0	0
				Winter	5	45				

Source: District 5 Year Recreation Plan.

5.4 Resource Information

This Plan documents decisions and directions based on the information gained over the course of plan preparation.

Notwithstanding the potential general benefit from improvement in all resource information, specific information shortcomings have been identified during the preparation of the current plan. These shortcomings have a limiting effect upon the decisions and directions which have been set forth. These shortcomings, if not rectified, can be expected to create similar difficulties for any revisions to the current plan.

A) Inventory Information Needs:

1) Inventory Depletion

The entire Forest cover information in the TSA is digitized and represents a layer of information on the Forest Inventory Planning (FIP) Data Base. This inventory will be annually updated and projected for depletion and reforestation. Currently, this work is occurring at the Regional Office, but will be decentralized to the McBride Forest District when funding is available for Geographic Information Systems (GIS) hardware in the District.

2) Map Digitizing

The ecosystem classification system is currently being digitized and when completed will form a layer of resource information on the Forest Inventory Planning (FIP) data base. This classification will be easily linked to the Forest cover information and allow forest planning to estimate site indices for regenerated stands. Additionally, inoperability and harvest systems in operable areas will be digitized using Terra Soft hardware, and will be uploaded into the (FIP) data base. This will allow forest planning to readily identify the Net Land Base and will aid in deriving Delivered Wood Cost estimates of the Inventory.

3) Growth and Yield

First approximation Managed Stand Yield Tables are required for the range of potential pest management and silviculture treatments (including planting regimes) for the forest types found in the TSA. This should include Managed Stand Yield Tables for stand tending of the current inventory of immature forest types. In addition, growth and yield installations need to be established over the next five years. Thirteen installations will be established in natural stands, and 5 installations in managed stands.

B) Planning Information Needs:

1) Planning cell boundaries will be adjusted in Supply Block #A to better reflect the land topography. In all Supply Blocks, planning cell boundaries will be adjusted to exclude land base which will not be available for long term forest management in the TSA (ie: Ecological Reserves, Wilderness Areas, Woodlots, Private land etc.) Revised planning cell boundaries will be digitized to represent a layer of information on the Ministry of Forests Forest Inventory Planning (FIP) data base.

2) A method of linking the setting (AAC Determination) and monitoring (cut control) of the rate of timber harvesting is required. This method will have to achieve compatibility between the various measurement procedures and data bases involved. It will also have to identify feasible ways which can monitor actual utilization in relation to assumed utilization.

3) An improved link between inventory, silviculture and local definitions and estimates of non-stocked areas (NSR, NCBr) must be developed.

4) An improved method for evaluating economic revenues and costs to aid management decisions regarding the determination of the Net Land Base must be developed. This method must ensure that stands excluded from the Net Land Base are geo-referenced with the Inventory to aid in examination of additional harvesting tenure. Inoperability mapping will aid this endeavour.

5) Estimates of Volume losses to fire should be improved to reflect only those losses that occur to the Net Land Base, rather than the gross Land Base. This will presumably result in lower unsalvaged fire losses, applied in the timber supply analysis. Data obtained from this work may also have predictive capability for future fire occurrence in certain types of stands, based on the past occurrence of fire.

C) Research Information Needs:

1) Research is required to determine the impact of Root Disease on stand development. This research should include survey techniques, and the effect of the intensive management of plantations upon disease growth and spread.

2) In conjunction with a Local Resource Use Planning process in the Robson Valley (Section 6.1), a pilot project will be proposed on Lucille Mountain to study the feasibility of selective cutting combined with small clearcuts in spruce-balsam stands. This proposal will be designed to minimize adverse aesthetic effects of logging in an area visible to tourists and residents of the Robson Valley and will evaluate alternative harvesting and silviculture methods. Aesthetic; recreational and watershed values will be protected.

D) Range Information Needs:

1) McBride District staff have incorporated the Range resource in the Forest Inventory. Over the next 5 years, this Inventory will provide the required information for range planning at the resource development planning level. However, if future funding can be provided for a range inventory the current Range inventory will be updated.

E) Recreation Information Needs:

1) The recreation feature inventory, the first component of the recreation resource inventory, has been completed and will require periodic review and update.

2) The second component of the recreation resource inventory, the Recreation Opportunity Spectrum (ROS), is completed and will require regular review and update.

3) Landscape inventories and analysis and the setting of visual quality objectives (VQOs) will be conducted in areas having high visual concerns which includes Highway corridors, key recreation sites and trails, and Provincial Parks.

4) The data entry process of digitizing Recreation overlays onto the Forest Inventory Planning database, and the complementary attribute lists are to be completed. This inventory will enable a more accurate analysis of the Forest Recreation Resource such as values, use and demand, and program objectives. This recreation resource analysis will form the basis of recreation input into the Plan update.

5) Recreation use and demand information is desperately needed. This information (which includes public and commercial recreation use/demand) is required to successfully complete the recreation resource analysis.

6.0 PLANNING DIRECTIONS

This Plan gives direction to plans that cover smaller areas of the TSA. This direction includes setting management prescriptions to be used as guidelines for local resource use areas in the TSA, and the setting of priorities and terms of reference for preparing Local Resource Use Plans, Licence Management and Working Plans, and Resource Development Plans. The approval of all Licence Management and Working Plans, and the adjudication of Five Year Development Plans will be in accordance with this Plan.

Areas of the TSA where harvesting is proposed over the next 20 years have been divided into 32 operating areas. These operating areas provide 20 years of sufficient volume for established Forest Licences , Timber Sale Licences and the SBFEP and are shown on TSA Map #2. Within each operating area, and for each planning cell in the area, a set of harvesting prescriptions have been developed to determine the area and volume that a licensee is allowed to harvest. These prescriptions and their resource emphasis for each planning cell in each operating area are identified in Section 6.2, 6.3 and in Appendix 9.1.

The Net Land Base summarized in Table 1 also guides all subsequent, and more area-specific plans in the TSA. This Net Land Base is documented in a planning data base which identifies those areas and volumes of timber upon which the current plan and the AAC are based. This same data base which is in the public domain will be used for all subsequent analysis and planning in the TSA until the next Plan update. In some cases, it may be necessary to refer to other planning documents to find the description of stands that were excluded from the Net Land Base of this Plan.

6.1 Local Resource Use Plans

This Plan gives direction to Local Resource Use planning by identifying the Net Land Base, and the 20-year supplies of Crown timber. This plan, also flags those areas which are slated for resource development, but which can be expected to require more detailed, area-specific integrated resource use guidelines before the resource emphasis can be determined for the area. These Plans cover those areas identified in TSA Map #1, Zone 5A and 5B.

These areas, in order of importance, are:

A) Robson Valley

The McBride T.S.A. Options Report was released to the public at a meeting in the Dunster Hall on December 3, 1987. Considerable concern was expressed about harvesting in the Robson Valley, particularly with respect to it's impact on recreation resources, aesthetics, and potential impacts on rural water users. It was decided to address these concerns through the preparation of Local Resource Use Plans for the areas.

The purpose of this planning process is to identify available timber supplies in the Robson Valley in light of the special requirements for protection of the visual and watershed resources.

The specific objectives are:

i) To consider the views of resource users, concerned agencies and the public, and to keep all concerned parties informed.

ii) To guide Licensee and Small Business Forest Enterprise Program harvesting proposals in the Robson corridor ensuring that other resource values are protected.

iii) To determine acceptable levels of development for all resources in the study area and to document the economic, social, and environmental impacts associated with each option.

iv) To provide more detailed information on timber availability and appropriate landscape and watershed constraints for the next Resource Management Plan for the Robson Valley T.S.A.

A copy of the General Terms of Reference for all Local Resource Use Plans in the Robson Valley is included in Appendix 9.2. The priorities for establishing these plans are to address the areas around Tete Jaune-Croyden first, due to immediate harvesting plans by Hauer Bros Lumber Ltd. in the vicinity. On TSA Map #1, this area is determined by Zone 5A and includes Planning Cell No.s, G007-G009, D005, D006, E001-E006, F008 and F016.

Other priorities for LRUPs in this zone will be scheduled at a later date.

B) Recreation Management Area Studies

There are two areas that have the capability for recreation management. These include the following areas and they are identified on TSA Map #1, Zone 5B.

1) Morkill/Holmes:
   This is an area adjacent to the Alberta Willmore Wilderness Area.

2) Upper Raush:
   This is an area surrounding Mt. Quantsam, the Raush Glacier and the Upper Canoe Drainage.

Over the term of this Plan the management options for these areas will be assessed through a Local Resource Use Planning Process.

C) Fraser River Recreation Corridor Study

The section of the Fraser River from Mt. Robson to Prince George was identified in 1986 as a waterway to be studied as part of Government's Recreation Corridors Program. This potential recreation corridor posseses significant historic, scenic and recreation values to residents of, and visitors to, the Robson Valley. Broad management studies will be established for the waterway, and the corridor will be subject to a Local Resource Use Planning Process, to set mangement guidelines for adjacent Provincial Forest land along the waterway.

D) Provincial Forest Reviews

Although these reviews are not actually part of the Forest Service planning framework, in some cases, they could substantially affect the forest land base.

The Ministry of Forests acknowledges three categories of Crown Land. Timber on these lands will be disposed of consistent with the following management strategies:

1) Crown Land Within a Provincial Forest

The current priorities and scheduling for Provincial Forest reviews will continue and this process will identify new lands available for agriculture development on a periodic basis. Otherwise, all timber located on Crown lands within Provincial Forest whether on Agriculture Land Reserve (A.L.R.) or other potentially arable land is available for disposition to the forest industry.

Two exceptions to the above are noted:

(a) Where an application for an agriculture lease has been made by an existing farmer who meets the eligibility criteria for expansion, over which there is no currently approved five year development plan, all timber will be held from disposition effective the date of agriculture lease application unless the application is disallowed.

(b) Where potentially arable land containing timber is immediately adjacent to private farm holdings, sound justification must exist for timber removal, otherwise some timber should be held from disposition.

All or part of four provincial forests lie within the Robson Valley TSA; the Betty Wendle, Longworth, Canoe and Robson. Only two provincial forests are scheduled for review. These are the Robson and Canoe which are both scheduled for review in 1990/1991.

2) Crown Land Outside of a Provincial Forest (Subject to Crown Land Plan)

Timber located on lands identified as Agriculture Development Areas (A.D.A.) by a sub-District Crown Land plan process will be held from disposition to the forest industry. Other land use "zones" (Integrated Forest Management Areas (I.F.M.A.), Recreation and Conservation Management Areas (R.C.M.A.), Wildlife Habitat Management Areas (W.H.M.A.) will be available for harvest subject to constraints as determined by the sub-District Crown Land plan process. Some A.D.A. lands may be available for harvest if sound justification is made in a specific referral indicating risk or damage from fire, windthrow, insects or disease.

3) Crown Land Outside of a Provincial Forest (No Crown Land Plan)
Because these lands are not subject to an active sub-District Crown Land Plan, best use may not have yet been determined. The intent on these lands is, therefore, to accept proposals for licenses or permits and refer them to the Crown Lands Ministry to ensure no conflict. Where land is considered arable and is scheduled for agriculture development in the foreseeable future (max. 5-10 year time frame) it will be managed as in #2 above.

6.2 Licence Management and Working Plans

Licence Management and Working Plans will be assessed by the Regional Manager and approved on the basis of their conformity to this Plan's management strategies and any pertinent Local Resource Use Plan guidelines. This direction applies, over the term of this Plan to the following Licensees listed in Table 16.

Table 16. Licence Management and Working Plans

Licensee	License #	MWP #	Review Date
Slocan Forest Products Ltd.	A15430	1	Dec. 31, 1989
Ziedler Forest Industries Ltd.	A15429	1	Dec. 31, 1989
Bell Pole Co. Ltd.	A17799	1	Dec. 31, 1989
Hauer Bros. Lumber Ltd.	A17800	1	Dec. 31, 1989
Canadian International Timber Corp.	A30527	1	Dec. 31, 1988

Five Year Development Plans prepared in accordance to the Licence Management and Working Plan will propose harvesting operations in operating areas as designated on TSA Plan Map #2. Five Year Development Plans will identify harvesting areas that contain the same timber types as those that contribute to the Net Land Base (Table 1). In addition these plans will not normally remove volume in excess of that planned for each planning cell within each operating area. All licensee development plans will be available for a public review prior to District Manager approval.

Appendix 9.1 shows the licensee operating areas for the above licences, their integrated resource management emphasis, 20 year harvest schedules, and harvesting prescriptions for each planning cell within the operating area.

6.3 Small Business Forest Enterprise and Woodlot Programs

The Small Business Forest Enterprise Program will be carried out by the District Manager and the volume sold will be in accordance with the TSA AAC apportionment. All harvesting operations will conform to this Plan's management strategies and any pertinent Local Resource Use Plan guidelines. The SBFEP Five Year development plan will be available for a public review prior to District Manager approval.

Appendix 9.1 shows the SBFEP Operating areas, their integrated resource management emphasis, 20 year harvest schedules and harvesting prescriptions.

7.0 Plan Implementation

Implementation of this Plan is the responsibility of the District Manager. This responsibility is exercised by preparing, adjudicating, approving or recommending for Regional Manager approval lower level Forest Service and licensee plans. Implementation of the plan also involves using the Plan as a directive and a guideline for operational decision-making. The following sections describe aspects of implementation that are influenced by the Timber, Range and Recreation programs of the Forest Service, and the relationship between project planning and this Plan.

A) Timber

The Chief Forester has the authority to approve the annual allowable cut (AAC) for this TSA in accordance with Section 7 of the Forest Act. Policy directs that the approval of this Plan also approves the TSA AAC.

B) Range

Forage consumption by domestic animals (AUMs) is not a direct decision of this Plan but the ability to provide forage is a consequence of the decisions in this plan. Therefore the authorized use of forage in Section 5.2.1 will change as the McKale Community Pasture is developed. As documented in Section 4.2, over the next 5 years, use is projected to increase to 5,000 AUMs.

C) Recreation

Notwithstanding approval of this Plan by the Chief Forester, Local Resource Use Plans for the Robson, McBride and Valemount valleys; Recreation Management Area studies, and the Fraser River Recreation Corridor Study may be initiated prior to the approval of this Plan. These plans will be carried out at the Local Resource Use planning level and will be governed by existing policies and procedures.

D) Project Planning

Management directions set forth in this Plan will be documented in District Program Management Plans (PMPs) which will outline required forest management activities and sub-activities and their expected manpower and financial costs, to achieve the TSA management strategies.

The District PMPs will identify:

- projects and their costs;
- project priorities, and
- projects over and above current budget levels.

These plans will serve as a source of information for:

1) local requirements and opportunities to be considered during the preparation of the 5th year of the next Five Year Program.
2) adjustments to earlier years of the Five Year Program, as required, to ensure continuity between the new and earlier years.
3) the preparation of a budget submission for the next fiscal year.
4) the allocation of an approved budget and five year program goals to programs between TSAs/Districts, and between programs within the District; and
5) the Plan revision at periodic intervals.

8.0 Plan Monitoring

Monitoring of the Resource Management Plan for the Robson Valley TSA assesses management performance in relation to assumed performance to determine the extent to which the plan's direction is being implemented. The monitoring process will measure stated outputs and report these outputs on an annual basis; evaluate the results and take appropriate action if necessary. The measurement of the output and the evaluation of the results will be documented in the Robson Valley TSA Annual Report. Outputs to be measured include the following:

- Projected 20-Year Volumes Planned for Harvest by Licensee, and SBFEP will be monitored through the Forest Service's Harvest Data Base System which records volumes billed, by licensee.

- Projected 20 Year Areas (ha) Planned for Harvest by Forest Type will be monitored through the Inventory Branch, Forest Inventory Planning (FIP) Database.

- Access Development will be monitored through District Engineering Annual Reports on road and bridge construction and maintenance.

- Basic Silviculture Programs;, Site Preparation, Planting and Brushing and Weeding will be monitored through the District Silviculture Program Annual Reports and Performance Audits.

- Projected Unsalvaged Fire Losses will be monitored through the Forest Service Fire History System.

- Projected Unsalvaged Pest and Disease Losses will be monitored through District assessments of potential losses recorded from beetle probes following annual detection surveys, and through the District Timber Management Annual Reports on salvage efforts.

- Incremental Silviculture Programs will be monitored through District Silviculture Program Annual Reports.

- Authorized Range Use will be monitored through District Range Management Annual Reports on actual range use.

- Annual Site/Trail Maintenance and Development Requirements will be monitored through District Recreation Annual Reports on site and trail development and maintenance.

An evaluation of these results in comparison to the management strategies summarized in Table 2 will be completed. The evaluation will also assess management issues, public concerns, the progress of local resource use planning processes, and other agency objectives to determine the extent to which plan direction remains valid.

8.1 Amendment and Revision

This Plan may be amended. The Plan is ordinarily revised every 5 years, but it may be revised whenever the conditions or demands in the TSA change significantly or when changes in Forest Service goals, objectives and policies would have a significant effect on TSA level programs. Otherwise this Plan will be revised by January 1, 1993.

9.0

APPENDICES

Appendix 9.1

SBFEP and Licencee 20 Year Operating Areas

(published in seperate document)

9.2 Terms of Reference - Robson Valley Local Resource Use Planning Process

1. Background

The Robson Valley is located in the Robson Valley TSA and includes the Highway 16 corridor from Mt. Robson Park to the West Twin River. The Highway 5 corridor from Tete Jaune Cache to the TSA boundary near Albreda will also be subject to this planning process. The McBride T.S.A. Options Report was released to the public at a meeting in the Dunster Hall on December 3, 1987. Considerable concern was expressed about harvesting in the Robson Valley particularly with respect to it's impact on recreation resources, aesthetics, and potential impacts on rural water users. It was decided to address these concerns through the preparation of Local Resource Use Plans.

2. Purposes and Objectives

The purpose of this planning process is to identify available timber supplies in the Robson Valley in light of the special requirements for protection of the visual and watershed resources.

The specific objectives are:

i) To consider the views of resource users, concerned agencies and the public, and to keep all concerned parties informed.

ii) To guide Forest Licensee and Small Business Forest Enterprise Program harvesting proposals in the Robson corridor ensuring that other resource values are protected.

iii) To determine acceptable levels of development for all resources in the study area and to document the economic, social, and environmental impacts associated with each option.

iv) To provide more detailed information on timber availability and appropriate landscape and watershed constraints for the next Resource Management Plan for the Robson Valley T.S.A..

3. Planning Area

The study area described in section 1 above will be split into several smaller planning areas which will be dealt with in order of proposed development. The Tete Jaune-Croydon area will be addressed first.

4. Methods to be used

In order to accomplish the objectives as outlined in section 2, it is necessary to define the exact location of the operable, mature timber supplies in the plan area. Once this is done, the impact of harvesting on visual and watershed valves can be analyzed. This can be carried out in several ways:

i) Have the licensees (and the Forest Service Small Business Forest Enterprise Program) locate their proposed blocks (on paper) and assess these for landscape and watershed implications.

ii) Use the Terrasoft Harvest Feasibility Computer Program (available in Prince George Regional Engineering Section) to define the operable areas and test various candidate harvest blocks.

iii) An iterative process involving a combination of 1 and 2.

Further landscape inventory work (primarily evaluation of landscape resources from viewpoints other than along Highways 5 or 16) and landscape analysis work will be a necessary part of this process, regardless of which of the three approaches is taken.

The public will play a major role in this process. It is proposed that two public involvement events will be held for each of the L.R.U.P. areas. The first one would be held after the information assembly stage with a presentation of the relevant information (possibly colour theme maps of the merchantable, mature timber and some of the landscape inventory and watershed use information). The second one will be held to present the options developed by the planning team. The public will be advised of which option has been selected by the District Manager. (See Appendix for outline of the proposed process.)

5. Planning Team Composition

The planning process will be managed with McBride Forest District staff playing the major role. The Regional Resource Planner will assist with coordination and with the application of Terrasoft and/or other computer techniques. Other agencies will be invited to participate as required but will not be regular members of the planning team. The Water Management Section, the Fish and Wildlife Section, and the Parks Section of the Ministry of Environment and Parks will be invited to participate. The Regional District of Fraser-Fort George may be consulted during the process.

6. Description of the Final Product

The final product will contain both maps and written summaries (ie areas and volumes available for harvest) with enough detail to define with a reasonable degree of precision the amount of available mature timber given varying levels of landscape constraints. The level of map detail (probably at a 1:50,000 scale) will range from exact block locations to more general outlines of potentially harvestable timber.

Areas which are sensitive to harvesting due to high watershed and landscape values will be delineated. Based on the protection of these values the extent and location of operable mature timber will be identified. Responsibilities for plan monitoring and review will be identified.

Appendix - The Local Resource Use Planning Process

I Preliminary Organization

- prepare terms of reference
- document public issues and management concerns
- determine information needs

II Information Assembly

- complete landscape inventory
- collect any necessary information on water users
- obtain colour themed maps of mature, merchantable timber
- present information to the public

III Analysis

- location of operable, mature timber (Terrasoft or licensee location)
- completion of landscape analysis (Visual quality objectives)
- overlay (using G.I.S.) of the above two items
- formulation of management options considering timber, landscape, watershed and other resource values
- preparation of a planning options report

IV Evaluation of options

- Management review
- public review and comment

V Selection of an option

- review of options and public input by District Manager
- decision on course of action by District Manager
- advise public of decision

VI Implementation of plan

VII Monitoring, and updating the plan as harvesting takes place.

9.3 Resource Management Plan Maps

The following maps are available for viewing, by appointment, at the McBride District Office and the Prince George Forest Region Office in Prince George.

	Title	Scale	Description
#1	Resource Use Designation	1:250 000	Resource Use emphasis by Planning Cells.
#2	Robson Valley TSA 20 Year Operating Areas	1:250 000	20-Year Supplies of Crown Timber by Planning Cell and Licence

9.4 REFERENCES

1) AAC Rationale Report, Forest Service, Planning and Inventory Branch, Resource Planning Section, pp. 79-82.

2) Estimating Timber Availability using Multiresource Cut/Leave Ratios, Forest Service, Regional Planning and Timber, Prince George Forest Region.

3) Forest Act.

4) Forest and Range Resource Analysis 1984 Ministry of Forests. Strategic Studies Branch.

5) Forest Insect and Disease Impacts in Timber Supply Areas, October 1985.

6) Ministry of Forests Act.

7) Ministry of Forests (Forest Service) Management System, 1983.

8) Ministry of Forests (Forest Service) Policy Manual (Volume I, II and III).

9) McBride Timber Supply Area Yield Analysis Report, (September 1980), Forest Service, Prince George Forest Region, 26 pp.

10) McBride Timber Supply Area Statement of Issues, Options, and Procedures (September 1986), Forest Service, Prince George Forest Region, 22 pp.

11) McBride TSA Data Package, (October 1986), Forest Service, Prince George Forest Region.

12) McBride TSA Timber Supply Analysis Report (July, 1987), Forest Service, Inventory Branch, 54 pp.

13) McBride Timber Supply Area Options Report (December 1987) Forest Service, Prince George Forest Region, 38 pp.

14) McBride TSA Timber Supply Analysis Information Report (April 1987) Forest Service, Prince George Forest Region, 40 pp.

15) Prince George Forest Region Standard Operating Procedures (S.O.P.).

16) Range Act.

17) Recreational Manual.

18) Resource Planning Manual, Chapters 1, 3, and 8, Forest Service, Planning and Inventory Branch, Resource Planning Section.

9.5 GLOSSARY

1) Access development. The acquisition of right-of-way, planning, construction, maintenance and closing of roads, bridges and other works to enable resource use, primarily, the extraction of timber.

2) Action. One or more projects or tasks which are carried out to meet stated goals or objectives. See required actions.

3) Allowable annual cut (AAC). The maximum permissible rate of timber harvest for a specified area of land, in this case, the Robson Valley TSA.

4) AAC apportionment. The allocation by the Minister of the AAC for a TSA among timber tenures in accordance with Section 8 of the Forest Act.

5) Alternative. See Option.

6) Animal Unit Month (AUM). The amount of forage required to sustain one 455 kg cow and unweaned calf for one month.

7) Annual Report. See Ministry Annual Report (Forest Service) and TSA Annual Report.

8) District Program Management. The linking of available budgets to current plan directions to enable on-the-ground implementation of Forest Service policies and plans.

9) Forest enhancement. Increasing forest productivity or yield over and above natural or otherwise unmanaged levels. This includes pest management and incremental silviculture treatments. A point of confusion is that "renewing" the timber crop in accordance with Forest Service basic silviculture standards may lead to future yields above hisotric levels.

10) Forest protection. Protection of the resource (usually the timber growing stock) over the rotation, from forest renewal to final harvest. This includes fire suppression and pest control, and also a broader range of forest management activities, such as road access and all aspects of timber harvesting.

11) Forest renewal. The establishment of a future forest following the denudation of the existing, mature forest by harvesting or natural cuases. This is the practice of basic silviculture which includes site preparation, planting, brushing and weeding and surveys to ensure that regeneration delay and free-growing objectives are met.

12) Goal. A statement of purpose. For example, resource management goals, corporate goals or Five Year Program goals. Where purpose is identified with achieving specific outputs, then the terms goal and objective are often used synonymously.

13) Integrated resource management. Resource management practices which are predicated on the principle of integrating resource uses in order to achieve the optimum social and economic benefit to all resource users. A legislated requirement of the Forest Service as set out in Section 4c of the Ministry of Forests Act.

14) Issue. See management issue.

15) Local Resource Use Planning (LRUP). The development of area-specific integrated resource management guidelines to enable harvesting planning to proceed. One of five planning levels in the Forest Planning Framework (Resource Planning Manual, Chapter 1). LRUPs include, for example, Coordinated Resource Management Plans, Community Watershed Plans, and Resource Folio Plans.

16) Management Issue. A known or anticipated problem or perceived opportunity which surrounds the management of timber, range, recreation and other resource values.

17) Management Strategy. A game plan. In the Resource Management Plan for a TSA, the policies, priorities, and actions, and how these are orchestrated, to implement the management direction (i.e., production targets) established in the current plan.

18) Ministry Annual Report (Forest Service). The report submitted to government each year in accordance with Section 10 of the Ministry of Forests Act. The Ministry Annual Report reviews and evaluates the Forest Service's expenditures, revenues and accomplishments with respect to the Five Year Program then in effect.

19) Monitoring. Review, evaluation, follow-up. The periodic reassessment of plan direction and plan assumptions, leading to plan update (minor changes) or plan revision (major changes).

20) Net Land Base. The portion of a land base which is considered to contiribute to, and be available for, long term timber supply. The Net Land Base is defined for an option by reducing (or "netting down") the total (or "gross") land base in a manner consistent with the mangement assumptions for that option.

21) Non-stocked areas. Areas classified by the forest inventory as forest land, but not covered by acceptable species to sufficient stocking. Includes NSR (current or backlog), DSD and NC.

22) Planning Cell. A subdivision of a Supply Block which has been identified to enable more detailed analysis of timber volumes and harvesting priorities, and facilitate timber development planning. Planning Cells are grouped into Operating Areas, and are delineated on Map #2 (Appendix 9.1).

23) Option. A set of assumptions representing a possible management direction. The term option can be used in the context of a management option, a planning option or an analysis option depending upon the nature of the assumptions defining the option. An option is usually synonymous with an "alternative" or "scenario".

24) Planning. A support to (forest) management which synthesizes data, coordinates decision-making, evaluates alternatives and translates policies into plans. Discussed in the Forest Planning Framework (Resource Planning Manual, Chapter 1).

25) Objective. See goal.

26) Planning horizon. The time frame addressed in a plan. A planning horizon includes a look-ahead period, or long term, which is required to understand resource dynamics and provide a basis for evaluating alternatives, and a detailed period, or short term, which is needed to lay out management guidelines and provide a basis for operational decision-making.

27) Production target. A forecast of resource supply over time, based on current policies, programs and practices, and their continuation over the planning horizon. In the Resource Management plan, production targets are identified for timber harvesting, forage harvesting and recreation opportunity. The first five years of the timber harvesting production target is the AAC for the Resource Management for the term of the current Resource Management Plan.

28) Program. A set of management directions or actions, such as the Small Business Enterprise Forest Program. Also, government direction to the Ministry through the Five Year Program. Also, one of ten categories in the Ministry Financial Services Program/Estimates User Procedures Manual, for example, the Harvesting Program. Also the various Resource Programs (such as "scaling" or "protection") which, individually, are managed by a Resource Officer and which, collectively, constitute District Program Management.

29) Public concern. Similar in nature to a mangement issue, but with the distinction that resource managers and the public may have different perceptions of resource management problems and opportunities. See management issue.

30) Recreation experience. Any personal recreational use of or in the forest and wildland environment which provides satisfaction or enjoyment. The experience may be active or passive, consumptive or non-consumptive. It may occur in primitive, semi-primitive or roaded resource lands, as defined by the Recreation Opportunity Spectrum system, or it may be facilities oriented. See Recreation Opportunity Spectrum.

31) Recreation opportunity. The opportunity for recreation experience. This includes features of interest such as mountains, rivers, lakes, trails, sites, flora, fauna, scenery and other elements of the forest or wildlife environment.

32) Recreation opportunity production target. See production target.

33) Regeneration delay. The number of years between the denudation of a forest stand by harvesting or natural causes and the establishment of the next crop.

34) Regional Priorities and Procedures. Broad, often non-quantitative resource management goals, objectives, priorities or procedures established by a Forest Region. One of five planning levels in the Forest Planning Framework (Resource Planning Manual, Chapter 1).

35) Required actions. One or more actions which must be carried out to meet stated program or activity goals and, through the achievement of those goals, implement the management direction established in the current Resource Management plan. In general, required actions are patterned after activities, sub-activities or sub-sub-activies as defined in the Ministry Financial Services Program/Estimates User Procedures Manual. See action.

36) Resource Development Planning (RDP). The logistics for resource use development. One of five planning levels in the Forest Planning Framework (Resource Planning Manual, Chapter 1). Includes, for example, Forest Licence Management and Working Plans, Five Year Timber Development Plans, Logging Plans, and Range Unit Plans.

37) Resource Managemet Plan. The forest management plan developed for a TSA. The Resource Management plan establishes the overall direction for the management of the forest and range resources under Forest Service jurisdiction in a TSA. This management direction includes the specification of production targets, provisions for other agency objectives, management strategies, directions to lower level plans and Five Year Program needs and opportunities.

38) Short term. The detailed period of a Resource Management plan for a TSA. The period over which production targets and management strategies are detailed. Normally, the next 20 years. See planning horizon.

39) Species profile. The composition of the timber harvest in terms of timber species.

40) Stand age. The age, in years, of a forest stand as determined by inventory procedures.

41) Stand diameter. The diameter breast height (dbh) of a tree of average basal area of a forest stand as determined by inventory procedures.

42) Standard Operating Procedures (SOPs). Procedures developed to implement Ministry policies within a Forest Region.

43) Strategy. See management strategy.

44) Sub-activity. See required actions.

45) Sub-sub-activity. See required actions.

46) Supply Block. A subdivision of a TSA which is identified to facilitate resource management planning and timber administration. Typically, areas within a TSA which are relatively homogenous with respect to forest types, harvesting systems, or tansportation routes.

47) Timber administration. The sale and disposal of timber.

48) Timber harvesting production target. See production target.

49) Timber Supply Area (TSA). An integrated resource management unit established, in accordance with Section 6 of the Forest Act, as a revision to and a consolidation of the former public Sustained Yield Units. The TSA is the land unit with respect to which Resource Management planning is carried out.

50) TSA Annual Report. The report submitted to the Regional Manager each year in accordance with the Resource Planning Manual. The TSA Annual Report reviews and evaluates Resource Management plan direction and plan assumptions in relation to current issues, and actual accomplishments.

51) TSA planning process. Forest management planning as carried out for TSAs in accordance with Chapter 3 of the Resource Planning Manual.

52) Twenty-year supplies of Crown timber. Designation, for planning purposes, of the geographical location of the supply of Crown timber over the 20-year planning horizon of the Resource Management plan. Such areas are shown on a map accompanying a Resource Management plan document. Becase the location of the timber harvest is the major determinant of access development, forest renewal, forest protection and forest enhancement, Five Year Program requirements, and expected integrated resource use conflicts, its designation is an essential component of a Plan. Because of changing conditions and the Ministry's volume based tenure system, these designations are subject to review along with the plan. These designations may be largely a matter of licensee preference, or their determination may be the crux of the development of a plan. Normally, these designations conform to or are developed from "planning cells", "interest areas", "chart areas", "operating areas" or other such formal or informal designations.

53) Unsalvaged losses. The volume of timber killed (annually over a specified Net Land Base) by natural causes and not harvested. Unsalvaged losses include the volume of timber actually killed plus any residual stand volumes rendered non-merchantable.

54) User day (UD). A day or part of a day spent by one person in the forest or wildland environment in pursuit of recreation experience. See recreation experience.